Entrainement TSTI2D :

Contenu

$-\frac{4}{2}-\frac{8}{3}$	$\lim\limits_{x\to+\infty}\left(\frac{12x^2+2x\ -4}{-x^2-2x\ +8}\right)$
$\sin(x-\pi)$	$F\begin{pmatrix}-13\\22\end{pmatrix}$ et $C\begin{pmatrix}24\\13\end{pmatrix}$ $\overrightarrow{CF}$
$35i-49+43+15i$	$f(x)=-5x^4-10x$ $F(x)=$
$z=\sqrt{3}\,i-1$ $\lvert z\rvert\,;\arg(z)$	$\begin{cases}u_0=-8\\u_{n+1}=-6u_n\end{cases}$ $u_{20}=$
$f(x)=9\cos(6x+10)$ $f'(x)=$	$f(x)=\left(-7x^2-\frac{2}{x^8}-x^4\right)^9$ $f'(x)=$

15×25	$\lim\limits_{x \to +\infty} \left(\dfrac{9x^2 - x - 2}{5x^2 - 12x - 10} \right)$
$-\sin(\pi + x)$	$H \begin{pmatrix} -9 \\ -19 \end{pmatrix}$ et $E \begin{pmatrix} 21 \\ -23 \end{pmatrix}$ $\overrightarrow{HE}$
$(9i - 8)(-7i + 8)$	$f(x) = 8x^9 - 9 + \dfrac{8}{x^2}$ $F(x) =$
$z = -10 - 6i$ $\lvert z \rvert =$	$\begin{cases} u_0 = 8 \\ u_{n+1} = 8u_n \end{cases}$ $u_{16} =$
$f(x) = \left(\dfrac{7}{x^7} - \dfrac{4}{x^9} \right) \left(-x^{10} + \dfrac{4}{x^5} \right)$ $f'(x) =$	$f(x) = \left(-10x^{10} + \dfrac{5}{x^{10}} + 8x^9 \right)^8$ $f'(x) =$

$\left(-\frac{24}{1}\right)\times\left(+\frac{5}{36}\right)$	$\lim\limits_{x\to-\infty} 7\left(\frac{}{x}\right)$
$\cos(-x)$	$\vec{u}(4\ ;\ -8)\ et\ \vec{v}(-2\ ;\ 2)$ $\vec{u}\cdot\vec{v}$
$P(x)=x^2\ -6x+5$ $\sqrt{\Delta}=4$ $racines$	$f(x)=-x^6-6-\frac{6}{x^7}$ $F(x)=$
$z=6+4i$ $\lvert z\rvert=$	$\begin{cases}u_0=-8\\u_{n+1}=u_n-3\end{cases}$ $u_{15}=$
$f(x)=(x^2-7x^3)\left(\frac{6}{x^{10}}+\frac{9}{x^8}\right)$ $f'(x)=$	$f(x)=\cos^5(-7x+1)$ $f'(x)=$

49×51	$\lim\limits_{x \to +\infty} \left(\dfrac{3x^2 + 5x}{-8x^2 - 12x - 1} \right)$
$-\cos\left(x - \dfrac{\pi}{2}\right)$	$\vec{u}(6\,;\,2)\ et\ \vec{v}(-8\,;\,4)$ $\vec{u} \cdot \vec{v}$
$(5 + 8i)^2$	$f(x) = 6x^7 - 6x - 6x^9$ $F(x) =$
$z = -6 - 3i$ $\lvert z \rvert =$	$\begin{cases} u_0 = 8 \\ u_{n+1} = u_n + 6 \end{cases}$ $u_5 =$
$f(x) = \dfrac{-4x^{10}}{\dfrac{1}{x^5} + \sqrt{x}}$ $f'(x) =$	$f(x) = \cos^8(-4x + 1)$ $f'(x) =$

$27^2 - 33^2$	$\lim\limits_{x \to +\infty} \left(\frac{2}{5x^{10}}\right)$
$\sin(-x)$	$\vec{u}\begin{pmatrix}-4\\-7\end{pmatrix}$ *et* $\vec{v}\begin{pmatrix}9\\6\end{pmatrix}$ $\vec{u} \cdot \vec{v}$
$(-1 - 9i)(-1 + 2i)$	$f(x) = 5 + 10x^9 - 7\cos x$ $F(x) =$
$z = -9 + 10i$ $\lvert z \rvert =$	$\begin{cases} u_0 = 10 \\ u_{n+1} = -6u_n \end{cases}$ *terme général*
$f(x) = (x^2 - 5x^{10})(-8\sin x + 2x^{10})$ $f'(x) =$	$f(x) = \sin^7(x + 2)$ $f'(x) =$

28×32	$\lim\limits_{x \to -\infty} \left(\frac{3}{4x^5}\right)$
$-\cos(\pi - x)$	$F(9\ ;\ -1) et\ A(-12\ ;\ 19)$ $\overrightarrow{AF}$
$z = 3\cos\left(-\frac{3\pi}{6}\right) + 3i\sin\left(-\frac{3\pi}{6}\right)$ $z =$	$f(x) = -7x^6 - 8x^4 + 8x^5$ $F(x) =$
$z = 1 - 7i$ $\lvert z \rvert =$	$\begin{cases} u_0 = 0 \\ u_{n+1} = -10u_n \end{cases}$ *terme général*
$f(x) = \left(\frac{2}{x^9} + \frac{7}{x^6}\right)\left(\frac{9}{x^7} + x^6\right)$ $f'(x) =$	$f(x) = \left(2x^8 - \frac{9x^{10}9}{x^3}\right)^5$ $f'(x) =$

$\frac{1}{10}+\frac{7}{7}$	$\lim\limits_{\substack{x\to 6\\ x<6}}\left(\frac{-x+9}{-6+x}\right)$
$-\cos\left(\frac{\pi}{2}-x\right)$	$C(2\,;\,-1) et\ H(-21\,;\,-25)$ $\overrightarrow{HC}$
$z=8\cos\frac{\pi}{3}+8i\sin\frac{\pi}{3}$ $z=$	$f(x)=10x^3-x^{10}-6x^3$ $F(x)=$
$z=-\sqrt{2}+\sqrt{2}\,i$ $\lvert z\rvert\,;\arg(z)$	$\begin{cases}u_0=-10\\ u_{n+1}=8u_n\end{cases}$ $u_{13}=$
$f(x)=(\sin x-6x)\left(\frac{-7}{x^5}+x^9\right)$ $f'(x)=$	$f(x)=\left(\frac{7}{x^7}+x^9-1\right)^8$ $f'(x)=$

$\left(-\frac{12}{6}\right)\times\left(-\frac{5}{4}\right)$	$\lim\limits_{x\to-\infty}(-3x^{10}-x^2-9x)$
$\cos(\pi-x)$	$H(4\,;\,-2) et\ E(-8\,;\,2)$ $\left\|\overrightarrow{HE}\right\|$
$(-5i+4)(8i+1)$	$f(x)=8x^5+x^7-6$ $F(x)=$
$z=-1+6i$ $\|z\|=$	$\begin{cases}u_0=-6\\u_{n+1}=4u_n\end{cases}$ $u_{13}=$
$f(x)=\dfrac{\frac{3}{x^6}}{-10\sin x-\frac{10}{x^2}}$ $f'(x)=$	$f(x)=\left(-6x^{10}-\frac{4}{x^3}\right)^8$ $f'(x)=$

48×52	$\lim\limits_{x \to -\infty} \left(\dfrac{-3x^2 + x + 9}{10x^2 - x + 6} \right)$
$\sin(x - \pi)$	$\vec{u}(-1\,;\,5)$ *et* $\vec{v}(-6\,;\,-8)$ $\vec{u} \cdot \vec{v}$
$(5i - 1)^2$	$f(x) = 3\cos x - 9\sin x - 5x$ $F(x) =$
$z = -\sqrt{3} + i$ $\lvert z \rvert\,;\arg(z)$	$\begin{cases} u_0 = 1 \\ u_{n+1} = -2u_n \end{cases}$ *terme général*
$f(x) = \dfrac{\frac{9}{x^2} + \frac{10}{x^3}}{2\cos x}$ $f'(x) =$	$f(x) = \cos^7(-9x + 7)$ $f'(x) =$

$\left(+\frac{30}{20}\right)\times\left(-\frac{15}{30}\right)$	$\lim\limits_{x\to+\infty}(11x^3-12x^2+6x+5)$
$-\sin(x+\pi)$	$B(-21\,;\,-2) et\ E(-20\,;\,-19)$ $\overrightarrow{BE}$
$P(x)=7x+2x^2$ $\Delta=$	$f(x)=-\frac{10}{x^4}-2+9x$ $F(x)=$
$z=-9+2i$ $\lvert z\rvert=$	$\begin{cases}u_0=-5\\u_{n+1}=-6u_n\end{cases}$ *terme général*
$f(x)=\left(9\sin x+\frac{5}{x^3}\right)\left(9x^9-\frac{5}{x^4}\right)$ $f'(x)=$	$f(x)=\left(-\frac{7}{x}-9+\frac{10}{x}\right)^5$ $f'(x)=$

$\frac{6}{10}+\frac{9}{5}$	$\lim\limits_{\substack{x\to 0\\ x>0}}\left(\frac{3}{x^{10}}\right)$
$\cos(x-\pi)$	$E(-9\,;\,3) et\ E(-11\,;\,22)$ $\overrightarrow{EE}$
$(-6i+5)(5-1i)$	$f(x)=8x-x^2-6x^7$ $F(x)=$
$z=1$ $\lvert z\rvert\,;\arg(z)$	$\begin{cases}u_0=6\\ u_{n+1}=-3u_n\end{cases}$ $u_3=$
$f(x)=\frac{-5x}{8x^2+6x^5}$ $f'(x)=$	$f(x)=\cos(-8x+10)$ $f'(x)=$

$\left(+\frac{24}{3}\right)\times\left(-\frac{6}{6}\right)$	$\lim\limits_{x\to-\infty}\left(\frac{11}{6x^5}\right)$
$-\sin(\pi+x)$	$\vec{u}\begin{pmatrix}-1\\2\end{pmatrix}$ *et* $\vec{v}\begin{pmatrix}9\\-1\end{pmatrix}$ $\vec{u}\cdot\vec{v}$
$\lvert z\rvert = 1\,;\arg(z) = 0$ $z =$	$f(x) = 10x^6 + 7x - 6x^9$ $F(x) =$
$z = 6 + i$ $\lvert z\rvert =$	$\begin{cases}u_0 = 0\\u_{n+1} = u_n - 5\end{cases}$ *terme général*
$f(x) = 6\cos x - 8x^3 + 3x^8$ $f'(x) =$	$f(x) = \left(5x^9 + 5x^3 - \frac{6}{x^8}\right)^6$ $f'(x) =$

$\left(+\frac{6}{2}\right)\times\left(-\frac{4}{12}\right)$	$\lim\limits_{x\to-\infty}\left(\frac{10x\ -1}{-2x^2-x\ -7}\right)$
$-\sin(\pi-x)$	$\vec{u}\begin{pmatrix}-3\\-8\end{pmatrix}$ *et* $\vec{v}\begin{pmatrix}1\\-1\end{pmatrix}$ $\vec{u}\cdot\vec{v}$
$-5i+22i-19+30$	$f(x)=-7\sin x-6x^6+3x^8$ $F(x)=$
$z=-i+\sqrt{3}$ $\lvert z\rvert\ ;\arg(z)$	$\begin{cases}u_0=-3\\u_{n+1}=u_n-3\end{cases}$ *terme général*
$f(x)=\dfrac{9\sqrt{x}}{\dfrac{7}{x}+\dfrac{3}{x^{10}}}$ $f'(x)=$	$f(x)=\left(\frac{1}{x^7}+\frac{5}{x^8}-\frac{1}{x^5}\right)^3$ $f'(x)=$

$\left(-\frac{4}{8}\right)\times\left(+\frac{12}{5}\right)$	$\lim\limits_{x\to-\infty}\left(\frac{6}{x^6}\right)$
$-\cos\left(\frac{\pi}{2}-x\right)$	$H\binom{10}{5}\ et\ B\binom{4}{5}$ $\left\|\overrightarrow{BH}\right\|$
$(7+i)^2$	$f(x)=\frac{3}{x^9}-4\cos x-\sin x$ $F(x)=$
$z=-\sqrt{2}+\sqrt{2}\,i$ $\|z\|\ ;\arg(z)$	$\begin{cases}u_0=7\\u_{n+1}=-8u_n\end{cases}$ *terme général*
$f(x)=(-4\sin x+3x^5)\left(x^7+\frac{10}{x^6}\right)$ $f'(x)=$	$f(x)=\left(-\frac{9}{x}-\frac{7}{x^5}-\frac{7}{x^3}\right)^{10}$ $f'(x)=$

$7^2 - 13^2$	$\lim\limits_{x \to +\infty} \left(-\dfrac{5}{4x^4}\right)$
$\sin(\pi + x)$	$C(7\ ;\ 8) et\ F(4\ ;\ 10)$ $\|\|\overrightarrow{FC}\|\|$
$\|z\| = 10\ ; \arg(z) = -\dfrac{\pi}{3}$ $z =$	$f(x) = 6\sin x + 3x^9 - 10x$ $F(x) =$
$z = -5 - 7i$ $\|z\| =$	$\begin{cases} u_0 = -4 \\ u_{n+1} = -5u_n \end{cases}$ *terme général*
$f(x) = (6x^4 + 10x^{10})\left(\dfrac{-5}{x^{10}} + \dfrac{1}{x^9}\right)$ $f'(x) =$	$f(x) = \cos^6(-10x - 9)$ $f'(x) =$

17×23	$\lim\limits_{x \to +1} \left(\dfrac{10x^2 - 8}{-6x^2 - 5x - 9} \right)$
$\sin\left(x - \dfrac{\pi}{2}\right)$	$C\begin{pmatrix} -8 \\ 0 \end{pmatrix} et\ A\begin{pmatrix} -2 \\ -7 \end{pmatrix}$ $\left\|\overrightarrow{AC}\right\|$
$\|z\| = 5\ ; \arg(z) = \dfrac{\pi}{2}$ $z =$	$f(x) = -5 - 6x^9 + 7x^6$ $F(x) =$
$z = -1 + \sqrt{3}\, i$ $\|z\|\ ; \arg(z)$	$\begin{cases} u_0 = 7 \\ u_{n+1} = u_n - 6 \end{cases}$ $u_{15} =$
$f(x) = \dfrac{\dfrac{-2}{x^8}}{-6x^5 - \dfrac{2}{x^6}}$ $f'(x) =$	$f(x) = \sin^7(6 - 9x)$ $f'(x) =$

$43^2 - 37^2$	$\lim\limits_{\substack{x \to -10 \\ x > -10}} \left(\dfrac{-x+6}{-10-x}\right)$
$-\cos\left(\dfrac{\pi}{2} + x\right)$	$B(-10\,;\,3) et\ F(-10\,;\,-5)$ $\left\|\overrightarrow{FB}\right\|$
$\|z\| = 6\,;\arg(z) = 0$ $z =$	$f(x) = -4x^9 + \dfrac{6}{x^9} + \dfrac{6}{x^4}$ $F(x) =$
$z = \sqrt{3} - i$ $\|z\|\,;\arg(z)$	$\begin{cases} u_0 = 6 \\ u_{n+1} = u_n - 2 \end{cases}$ $terme\ général$
$f(x) = 8\cos(-6x + 10)$ $f'(x) =$	$f(x) = \sin(1 + 10x)$ $f'(x) =$

$\left(+\frac{10}{3}\right)\times\left(+\frac{3}{2}\right)$	$\lim\limits_{x\to-\infty}\left(\frac{-12x^2+6x\ +9}{-2x^2+5x\ -4}\right)$
$\sin\left(\frac{\pi}{2}-x\right)$	$\vec{u}\begin{pmatrix}-5\\-4\end{pmatrix}$ *et* $\vec{v}\begin{pmatrix}-6\\0\end{pmatrix}$ $\vec{u}\cdot\vec{v}$
$\lvert z\rvert = 6\ ;\arg(z)=-\frac{\pi}{2}$ $z=$	$f(x)=7x^3-x^{10}+5x^2$ $F(x)=$
$z=\sqrt{2}+\sqrt{2}\,i$ $\lvert z\rvert\ ;\arg(z)$	$\begin{cases}u_0=-9\\u_{n+1}=u_n+5\end{cases}$ *terme général*
$f(x)=(8x^9+\cos x)\left(6x^{10}-\frac{8}{x^8}\right)$ $f'(x)=$	$f(x)=\sin(-7x-3)$ $f'(x)=$

17^2		$\lim\limits_{x\to+\infty}\left(\dfrac{4x^2-9x\ -4}{-3x^2+12x\ -8}\right)$
$\sin(\pi+x)$		$D(-17\ ;\ -15) et\ A(20\ ;\ 13)$ $\overrightarrow{AD}$
$\lvert z\rvert = 3\ ; \arg(z) = \dfrac{2\pi}{3}$ $z =$		$f(x) = 10x^2 + x^5 - 4\sin x$ $F(x) =$
$z = -\sqrt{2} - \sqrt{2}\,i$ $\lvert z\rvert\ ; \arg(z)$		$\begin{cases} u_0 = 0 \\ u_{n+1} = u_n - 4 \end{cases}$ *terme général*
$f(x) = \dfrac{10}{x^9} - 7x^2 + 8\sqrt{x}$ $f'(x) =$		$f(x) = \cos^3(-5+9x)$ $f'(x) =$

45×55	$\lim\limits_{x \to -1} (2x^3 - 5x^2 + 10x - 2)$
$\sin(-x)$	$B(-6\,;\,7) et\ C(-5\,;\,6)$ $\|\|\overrightarrow{BC}\|\|$
$z = 4\cos\dfrac{2\pi}{3} + 4i\sin\dfrac{2\pi}{3}$ $z =$	$f(x) = -\dfrac{8}{x^8} + \dfrac{9}{x^7} + 5x^5$ $F(x) =$
$z = -7 - 2i$ $\|z\| =$	$\begin{cases} u_0 = 9 \\ u_{n+1} = -5u_n \end{cases}$ $u_{15} =$
$f(x) = \left(\dfrac{1}{x} + \dfrac{1}{x^5}\right)(x + 9\cos x)$ $f'(x) =$	$f(x) = \cos^4(-x - 8)$ $f'(x) =$

$\left(-\frac{36}{3}\right)\times\left(+\frac{9}{12}\right)$	$\lim\limits_{x\to-1}(-2x^{10}-11x^{8}-3x^{2}+5)$
$\sin(-x)$	$G(-13\,;\,-6)et\ B(-21\,;\,12)$ $\overrightarrow{GB}$
$(6+12i)^2$	$f(x)=-6\sin x-5\sin x-10x^2$ $F(x)=$
$z=-1+\sqrt{3}\,i$ $\lvert z\rvert\,;\arg(z)$	$\begin{cases}u_0=4\\u_{n+1}=2u_n\end{cases}$ $u_{11}=$
$f(x)=\frac{4x^9}{-2x-3x^5}$ $f'(x)=$	$f(x)=\cos^6(-8-10x)$ $f'(x)=$

$-\frac{2}{1}-\frac{2}{1}$			$\lim\limits_{x\to+\infty}\left(\frac{x^2+6}{-9x^2-6x\ -8}\right)$
$-\sin\left(\frac{\pi}{2}-x\right)$			$\vec{u}(-1\ ;\ -9)\ et\ \vec{v}(-7\ ;\ -5)$ $\vec{u}\cdot\vec{v}$
$P(x)=-60-3x+3x^2$ $\sqrt{\Delta}=27$ $racines$			$f(x)=-\frac{10}{x^8}+\frac{10}{x^4}-9x^{10}$ $F(x)=$
$z=-1-3i$ $\lvert z\rvert=$			$\begin{cases}u_0=-4\\u_{n+1}=u_n+1\end{cases}$ $terme\ général$
$f(x)=\frac{x^3-7x^7}{-9x^{10}}$ $f'(x)=$			$f(x)=\cos^7(-5+2x)$ $f'(x)=$

15^2	$\lim\limits_{x \to -\infty} 9\left(\frac{}{x}\right)$
$-\cos(x+\pi)$	$B\begin{pmatrix}22\\-3\end{pmatrix} et\ G\begin{pmatrix}-16\\9\end{pmatrix}$ $\overrightarrow{BG}$
$(4+i)(4-i)$	$f(x) = 7\sin x + 5x - 2x^9$ $F(x) =$
$z = -\sqrt{2} - \sqrt{2}\,i$ $\lvert z\rvert\ ; \arg(z)$	$\begin{cases} u_0 = -6 \\ u_{n+1} = -8u_n \end{cases}$ *terme général*
$f(x) = 8\cos(-9x-8)$ $f'(x) =$	$f(x) = \cos^6(-7+8x)$ $f'(x) =$

$\frac{2}{6}+\frac{9}{4}$			$\lim\limits_{x\to-\infty}\left(\frac{12x^2-4x\ -2}{-11x^2+9x\ -6}\right)$
$-\cos\left(\frac{\pi}{2}-x\right)$			$C(0\ ;\ -4) et\ B(-1\ ;\ 10)$ $\left\|\overrightarrow{CB}\right\|$
$z=\cos\left(-\frac{\pi}{2}\right)+i\sin\left(-\frac{\pi}{2}\right)$ $z=$			$f(x)=-x^7-\frac{1}{x^6}-5x^5$ $F(x)=$
$z=\sqrt{3}-i$ $\|z\|\ ;\arg(z)$			$\begin{cases}u_0=-6\\u_{n+1}=u_n+4\end{cases}$ *terme général*
$f(x)=2\sin(x-3)$ $f'(x)=$			$f(x)=\sin^6(7x-6)$ $f'(x)=$

$\left(-\frac{16}{6}\right)\times\left(+\frac{6}{12}\right)$	$\lim\limits_{x\to+1}\left(\frac{1}{2x^{10}}\right)$
$\sin\left(x-\frac{\pi}{2}\right)$	$D(14\,;\,-7) et\ F(-19\,;\,1)$ $\overrightarrow{FD}$
$-13i+11+32+48i$	$f(x)=x^7+9x^8+8x^4$ $F(x)=$
$z=-i+\sqrt{3}$ $\lvert z\rvert\,;\arg(z)$	$\begin{cases}u_0=10\\u_{n+1}=u_n+1\end{cases}$ $u_{10}=$
$f(x)=\frac{7x^7}{8x^9-2x}$ $f'(x)=$	$f(x)=\left(+\frac{8}{x^2}-10x^9\right)^{10}$ $f'(x)=$

20^2		$\lim\limits_{x\to+\infty}\left(\dfrac{11x^2+6x\ -5}{-7x^2+x\ -11}\right)$
$\sin(\pi-x)$		$B\begin{pmatrix}5\\2\end{pmatrix}$ et $D\begin{pmatrix}0\\-7\end{pmatrix}$ $\left\|\overrightarrow{DB}\right\|$
$(5+2i)(-2i+10)$		$f(x)=-\dfrac{2}{x^7}+5x^2+\dfrac{10}{x^6}$ $F(x)=$
$z=\sqrt{2}\,i+\sqrt{2}$ $\lvert z\rvert$; $\arg(z)$		$\begin{cases}u_0=0\\u_{n+1}=8u_n\end{cases}$ *terme général*
$f(x)=\left(9\sin x+\dfrac{9}{x^3}\right)\left(3x-\dfrac{7}{x^3}\right)$ $f'(x)=$		$f(x)=\cos(-10x+3)$ $f'(x)=$

$53^2 - 47^2$	$\lim\limits_{x \to +1} \left(-\dfrac{12}{x^9}\right)$
$-\cos(\pi - x)$	$B(15\ ;\ 23) et\ H(-21\ ;\ -9)$ $\overrightarrow{BH}$
$(9i + 5)(2 + 10i)$	$f(x) = -2\sin x + 2 + 8x^9$ $F(x) =$
$z = -10 - 9i$ $\lvert z \rvert =$	$\begin{cases} u_0 = 4 \\ u_{n+1} = -4u_n \end{cases}$ $terme\ général$
$f(x) = x^8 - 7x + x^{10}$ $f'(x) =$	$f(x) = \left(\dfrac{3}{x^4} + \dfrac{7}{x^9} + \dfrac{3}{x^6}\right)^9$ $f'(x) =$

$-\frac{6}{7}+\frac{10}{8}$	$\lim\limits_{x\to+\infty}\left(\frac{-3x^2+5x\ +2}{-4x\ +4}\right)$
$\sin(\pi+x)$	$C\begin{pmatrix}5\\-4\end{pmatrix}et\ H\begin{pmatrix}3\\-7\end{pmatrix}$ $\left\|\overrightarrow{HC}\right\|$
$z=6\cos 0+6i\sin 0$ $z=$	$f(x)=+2+\frac{4}{x^8}$ $F(x)=$
$z=-6-7i$ $\|z\|=$	$\begin{cases}u_0=9\\u_{n+1}=-10u_n\end{cases}$ $u_{14}=$
$f(x)=(-6x+8x^{10})\left(-8x^9-\frac{2}{x^3}\right)$ $f'(x)=$	$f(x)=\sin(5x+3)$ $f'(x)=$

$\left(+\frac{6}{12}\right)\times\left(+\frac{15}{24}\right)$	$\lim\limits_{\substack{x\to 0\\ x<0}}\left(\frac{10}{9x^6}\right)$
$-\sin(-x)$	$\vec{u}\begin{pmatrix}9\\1\end{pmatrix}$ *et* $\vec{v}\begin{pmatrix}3\\10\end{pmatrix}$ $\vec{u}\cdot\vec{v}$
$(5+3i)(5-3i)$	$f(x)=-3x^8-\frac{10}{x^9}+2x$ $F(x)=$
$z=-\sqrt{2}-\sqrt{2}\,i$ $\lvert z\rvert\,;\arg(z)$	$\begin{cases}u_0=-10\\u_{n+1}=2u_n\end{cases}$ *terme général*
$f(x)=\dfrac{\sqrt{x}}{\dfrac{-3}{x^{10}}+7\sin x}$ $f'(x)=$	$f(x)=\left(\frac{8}{x^7}-\frac{3}{x^7}+\frac{4}{x^2}\right)^4$ $f'(x)=$

22^2		$\lim\limits_{x \to +\infty} 10\left(\frac{}{x}\right)$
$\sin(-x)$		$E\begin{pmatrix}-9\\9\end{pmatrix} et\ F\begin{pmatrix}-8\\3\end{pmatrix}$ $\left\|\overrightarrow{EF}\right\|$
$\|z\| = 6\ ; \arg(z) = -\frac{\pi}{4}$ $z =$		$f(x) = -2\cos x + 2x^9 + 4x^3$ $F(x) =$
$z = i - \sqrt{3}$ $\|z\|\ ; \arg(z)$		$\begin{cases} u_0 = 1 \\ u_{n+1} = u_n + 6 \end{cases}$ *terme général*
$f(x) = \left(\frac{9}{x^3} - \sin x\right)\left(\frac{-1}{x^7} - \frac{5}{x^8}\right)$ $f'(x) =$		$f(x) = \cos(5x + 3)$ $f'(x) =$

19×21	$\lim\limits_{x \to -\infty} \left(\dfrac{-11x^2 + 7x + 11}{-9x^2 + 2x - 11} \right)$
$-\sin\left(\dfrac{\pi}{2} + x\right)$	$\vec{u}(-9\,;\,8)$ *et* $\vec{v}(-1\,;\,3)$ $\vec{u} \cdot \vec{v}$
$10i - 32i - 4 - 33$	$f(x) = 5x + 6x^8 + x^5$ $F(x) =$
$z = -\sqrt{2}\,i - \sqrt{2}$ $\lvert z \rvert$; $\arg(z)$	$\begin{cases} u_0 = 0 \\ u_{n+1} = u_n - 2 \end{cases}$ $u_{20} =$
$f(x) = \left(3x^6 + \dfrac{1}{x^5}\right)\left(\dfrac{-6}{x} + \sin x\right)$ $f'(x) =$	$f(x) = \sin^8(-2 - 3x)$ $f'(x) =$

14×6	$\lim\limits_{\substack{x \to 2 \\ x>2}} \left(\dfrac{x+2}{x-2}\right)$
$\cos(x - \pi)$	$\vec{u}(6\ ;\ 5)\ et\ \vec{v}(-6\ ;\ 9)$ $\vec{u} \cdot \vec{v}$
$P(x) = -4x + 3 + x^2$ $\sqrt{\Delta} = 2$ $racines$	$f(x) = \dfrac{9}{x^5} - \dfrac{5}{x^{10}} - \dfrac{8}{x^7}$ $F(x) =$
$z = \sqrt{3}\, i - 1$ $\lvert z \rvert\ ;\arg(z)$	$\begin{cases} u_0 = -9 \\ u_{n+1} = 7u_n \end{cases}$ $terme\ général$
$f(x) = \left(2 \sin x + \dfrac{2}{x}\right)(-5 \cos x - 9x^3)$ $f'(x) =$	$f(x) = (-2x^8 + 3x^9)^{10}$ $f'(x) =$

$49^2 - 51^2$	$\lim\limits_{\substack{x \to 6 \\ x<6}} \left(\dfrac{x+10}{-6+x}\right)$
$-\cos\left(\dfrac{\pi}{2}+x\right)$	$B(-8\,;\,-4) et\ F(-1\,;\,-6)$ $\left\|\overrightarrow{BF}\right\|$
$\|z\| = 10\,; \arg(z) = \dfrac{\pi}{2}$ $z =$	$f(x) = -9x^{10} + 8x^6 - 10x^8$ $F(x) =$
$z = 10 + 2i$ $\|z\| =$	$\begin{cases} u_0 = -3 \\ u_{n+1} = 1u_n \end{cases}$ $u_{13} =$
$f(x) = \dfrac{-7}{x^4} - 4x^4 + x$ $f'(x) =$	$f(x) = \left(-4 - 3x^7 - \dfrac{9}{x^3}\right)^7$ $f'(x) =$

$32^2 - 28^2$	$\lim\limits_{\substack{x \to -5 \\ x<-5}} \left(\dfrac{-4+x}{5+x}\right)$
$\cos(x - \pi)$	$E(-1\,;\,10) et\ B(9\,;\,-9)$ $\left\|\overrightarrow{EB}\right\|$
$P(x) = 3x^2 - 12$ $\sqrt{\Delta} = 12$ $racines$	$f(x) = \dfrac{4}{x^9} + \dfrac{3}{x^3} + 5x^8$ $F(x) =$
$z = 4 - 1i$ $\|z\| =$	$\begin{cases} u_0 = -1 \\ u_{n+1} = u_n - 7 \end{cases}$ $terme\ général$
$f(x) = 3x^9 + \dfrac{4}{x^9} - 8\cos x$ $f'(x) =$	$f(x) = \left(8 + 6x^9 + \dfrac{2}{x^{10}}\right)^{10}$ $f'(x) =$

$\left(+\frac{1}{5}\right)\times\left(+\frac{4}{2}\right)$	$\lim\limits_{x\to+\infty}(-6x^8+6x^3-4x^2-5)$
$\sin\left(\frac{\pi}{2}+x\right)$	$H\begin{pmatrix}4\\9\end{pmatrix}et\ D\begin{pmatrix}-8\\-2\end{pmatrix}$ $\left\|\overrightarrow{HD}\right\|$
$z=5\cos\left(-\frac{\pi}{6}\right)+5i\sin\left(-\frac{\pi}{6}\right)$ $z=$	$f(x)=10x^2+2x^6-3x^{10}$ $F(x)=$
$z=\sqrt{2}+\sqrt{2}\,i$ $\lvert z\rvert$; $\arg(z)$	$\begin{cases}u_0=-2\\u_{n+1}=u_n-6\end{cases}$ $u_{20}=$
$f(x)=2x^3+\frac{1}{x}+7\sin x$ $f'(x)=$	$f(x)=\left(-\frac{6}{x^2}-3x^7+4\right)^3$ $f'(x)=$

$\frac{10}{3} - \frac{7}{3}$	$\lim\limits_{x \to +\infty} (6x^{10} - 5x^9 + 9x^3 + 8x^2)$
$-\sin(-x)$	$\vec{u}(-6\,;\,-8)\ et\ \vec{v}(-7\,;\,9)$ $\vec{u} \cdot \vec{v}$
$\lvert z \rvert = 8\,; \arg(z) = \frac{\pi}{2}$ $z =$	$f(x) = -\frac{6}{x^5} - x^2 - 4x^4$ $F(x) =$
$z = -2 - 9i$ $\lvert z \rvert =$	$\begin{cases} u_0 = 1 \\ u_{n+1} = -7u_n \end{cases}$ $u_7 =$
$f(x) = \left(\frac{-6}{x^9} + 8\cos x\right)\left(-10\cos x + \frac{3}{x^2}\right)$ $f'(x) =$	$f(x) = \cos^8(-7 - 7x)$ $f'(x) =$

$\frac{9}{9}+\frac{9}{9}$		$\lim\limits_{x\to+\infty}(7x^6-2x^3-3x^2+5)$
$-\sin(\pi+x)$		$H\begin{pmatrix}8\\4\end{pmatrix} et\ G\begin{pmatrix}-6\\10\end{pmatrix}$ $\left\|\overrightarrow{HG}\right\|$
$(i+11)(i-11)$		$f(x)=x^{10}-x^9+6x^3$ $F(x)=$
$z=-8-8i$ $\|z\|=$		$\begin{cases}u_0=4\\u_{n+1}=u_n+1\end{cases}$ $u_1=$
$f(x)=\frac{-1}{x}+\frac{1}{x^2}-2x^7$ $f'(x)=$		$f(x)=\cos(-6x+1)$ $f'(x)=$

28^2	$\lim\limits_{x\to+\infty}\left(-\dfrac{2}{12x}\right)$
$\sin(-x)$	$F\begin{pmatrix}7\\-11\end{pmatrix}$ et $E\begin{pmatrix}21\\-2\end{pmatrix}$ $\overrightarrow{EF}$
$z = 7\cos\dfrac{2\pi}{6} + 7i\sin\dfrac{2\pi}{6}$ $z =$	$f(x) = -\dfrac{2}{x^7} + \dfrac{4}{x^5} - \dfrac{3}{x^2}$ $F(x) =$
$z = -\sqrt{2} - \sqrt{2}\,i$ $\lvert z\rvert$; $\arg(z)$	$\begin{cases}u_0 = -5\\u_{n+1} = 4u_n\end{cases}$ $u_4 =$
$f(x) = 8\cos(-5x + 8)$ $f'(x) =$	$f(x) = \left(-\dfrac{6}{x^3} + 9x^3 + 6x^9\right)^7$ $f'(x) =$

$22^2 - 18^2$	$\lim\limits_{\substack{x\to 0 \\ x>0}} \left(\frac{8}{9x^6}\right)$
$-\cos(\pi - x)$	$G\begin{pmatrix}17\\-13\end{pmatrix}$ et $A\begin{pmatrix}18\\25\end{pmatrix}$ $\overrightarrow{AG}$
$(5+9i)^2$	$f(x) = 4 + 4x^6 + x^4$ $F(x) =$
$z = 1 + 7i$ $\lvert z\rvert =$	$\begin{cases} u_0 = 7 \\ u_{n+1} = 6u_n \end{cases}$ *terme général*
$f(x) = \dfrac{7\sqrt{x}}{\frac{9}{x^6} + \frac{6}{x^5}}$ $f'(x) =$	$f(x) = \sin^2(-4 + 10x)$ $f'(x) =$

$-\frac{3}{9}-\frac{7}{4}$	$\lim\limits_{x\to+\infty}(3x^3-8x^2-4x+11)$
$-\cos\left(x+\frac{\pi}{2}\right)$	$C\begin{pmatrix}-11\\23\end{pmatrix}$ et $A\begin{pmatrix}11\\14\end{pmatrix}$ $\overrightarrow{AC}$
$P(x)=5x^2+45-30x$ $\sqrt{\Delta}=0$ $racines$	$f(x)=-\frac{\frac{1}{x^{101}}}{x^3}+5x^5$ $F(x)=$
$z=-3-9i$ $\lvert z\rvert=$	$\begin{cases}u_0=1\\u_{n+1}=-5u_n\end{cases}$ $u_{19}=$
$f(x)=\frac{-2}{x^3}+x^6+x^2$ $f'(x)=$	$f(x)=\sin(3-10x)$ $f'(x)=$

$-\frac{2}{3}-\frac{5}{1}$	$\lim\limits_{x\to+\infty}\left(-\frac{6}{2x^2}\right)$
$\cos(x+\pi)$	$G(3\,;\,-6) et\ E(3\,;\,-1)$ $\left\|\left\|\overrightarrow{EG}\right\|\right\|$
$\|z\|=1\,;\arg(z)=-\frac{\pi}{2}$ $z=$	$f(x)=+\frac{8}{x^4}+9\cos x$ $F(x)=$
$z=9-5i$ $\|z\|=$	$\begin{cases}u_0=2\\u_{n+1}=u_n+4\end{cases}$ $u_5=$
$f(x)=\frac{-9}{x^{10}}-\frac{10}{x^{10}}+\frac{6}{x^9}$ $f'(x)=$	$f(x)=\left(-8+4x^8+\frac{8}{x^2}\right)^2$ $f'(x)=$

$16^2 - 24^2$		$\lim\limits_{x \to -\infty} (5x^5 + x^3 + 8x^2 - 6x)$
$-\cos\left(\frac{\pi}{2} + x\right)$		$C(8\,;\,-1) et\ E(3\,;\,5)$ $\left\|\overrightarrow{EC}\right\|$
$(8 + 8i)(8 - 8i)$		$f(x) = 10x^3 + 8x^8 - 3x^6$ $F(x) =$
$z = -1 + \sqrt{3}\, i$ $\|z\|\,;\arg(z)$		$\begin{cases} u_0 = 5 \\ u_{n+1} = u_n - 7 \end{cases}$ $u_1 =$
$f(x) = \left(\frac{5}{x^5} + x^8\right)(-10x^4 + 3x^6)$ $f'(x) =$		$f(x) = \cos^4(-8 - 2x)$ $f'(x) =$

$35^2 - 45^2$	$\lim\limits_{\substack{x \to 10 \\ x<10}} \left(\dfrac{x-4}{x-10}\right)$
$\cos(x+\pi)$	$A\begin{pmatrix}-16\\-22\end{pmatrix}$ et $C\begin{pmatrix}17\\-23\end{pmatrix}$ $\overrightarrow{CA}$
$35i + 27 - 27 - 20i$	$f(x) = -\dfrac{3}{x^9} - \dfrac{2}{x^6} + 5\sin x$ $F(x) =$
$z = -4 + 10i$ $\lvert z\rvert =$	$\begin{cases} u_0 = 4 \\ u_{n+1} = 8u_n \end{cases}$ *terme général*
$f(x) = -x^6 + 4x^5 - \dfrac{10}{x^9}$ $f'(x) =$	$f(x) = \left(\dfrac{9}{x^4} - 5x^7 - 8\right)^{10}$ $f'(x) =$

$\left(-\frac{6}{6}\right) \times \left(+\frac{6}{6}\right)$		$\lim\limits_{x \to -\infty} \left(\frac{10}{x^6}\right)$
$\sin(-x)$		$D(10\,;\,-9) et\ E(8\,;\,-16)$ $\overrightarrow{ED}$
$P(x) = 6x + 5 - 4x^2$ $\Delta =$		$f(x) = 2x^8 - 6 + x^2$ $F(x) =$
$z = -1 + 10i$ $\lvert z \rvert =$		$\begin{cases} u_0 = -7 \\ u_{n+1} = -10u_n \end{cases}$ *terme général*
$f(x) = 2x^7 - 7x^3 + 9x^5$ $f'(x) =$		$f(x) = \sin(-4 + 8x)$ $f'(x) =$

12^2		$\lim\limits_{x\to+\infty}(2x^8 - 11x^7 - 8x^2)$
$-\cos(\pi - x)$		$B(8\,;\,3) et\ C(-10\,;\,-4)$ $\left\|\overrightarrow{BC}\right\|$
$P(x) = 12 - 9x - 3x^2$ $\sqrt{\Delta} = 15$ $racines$		$f(x) = -9\cos x + \frac{7}{x^{10}} + \frac{9}{x^{10}}$ $F(x) =$
$z = \sqrt{2}\,i - \sqrt{2}$ $\|z\|\,;\arg(z)$		$\begin{cases} u_0 = 10 \\ u_{n+1} = -9u_n \end{cases}$ $u_{14} =$
$f(x) = \dfrac{10x^{10}}{-6x - \frac{2}{x^6}}$ $f'(x) =$		$f(x) = (2 - 7x^6 + 10x^4)^2$ $f'(x) =$

$-\frac{9}{6}+\frac{5}{5}$	$\lim\limits_{\substack{x\to 0\\ x>0}}\left(\frac{8}{x^9}\right)$
$-\cos(\pi-x)$	$G\begin{pmatrix}10\\-6\end{pmatrix}$ et $B\begin{pmatrix}-5\\-2\end{pmatrix}$ $\left\|\overrightarrow{GB}\right\|$
$(10i+1)(7+8i)$	$f(x)=x^3+9\cos x-10x^6$ $F(x)=$
$z=5-5i$ $\|z\|=$	$\begin{cases}u_0=-3\\u_{n+1}=u_n-2\end{cases}$ $terme\ général$
$f(x)=10\sin(-10x+7)$ $f'(x)=$	$f(x)=\cos^5(2+x)$ $f'(x)=$

16^2	$\lim\limits_{\substack{x\to 0\\ x>0}} \left(\frac{2}{x^2}\right)$
$-\cos\left(\frac{\pi}{2}+x\right)$	$\vec{u}\begin{pmatrix}-8\\-6\end{pmatrix}$ et $\vec{v}\begin{pmatrix}-8\\9\end{pmatrix}$ $\vec{u}\cdot\vec{v}$
$(5+4i)(5-4i)$	$f(x)=-3\sin x+5\cos x-6x^7$ $F(x)=$
$z=4+i$ $\lvert z\rvert=$	$\begin{cases}u_0=-9\\u_{n+1}=2u_n\end{cases}$ $u_5=$
$f(x)=\dfrac{\frac{7}{x^3}-\frac{6}{x^5}}{\frac{-3}{x^8}}$ $f'(x)=$	$f(x)=\cos^4(-2-x)$ $f'(x)=$

29^2	$\lim\limits_{x\to-\infty}(-x^6 - 4x^3 + 2x - 10)$
$\cos\left(\frac{\pi}{2} - x\right)$	$\vec{u}\begin{pmatrix}-3\\8\end{pmatrix}$ *et* $\vec{v}\begin{pmatrix}-6\\-2\end{pmatrix}$ $\vec{u}\cdot\vec{v}$
$-26i + 6 - 16i - 48$	$f(x) = x^6 + 10x^4 + 4x^6$ $F(x) =$
$z = -\sqrt{2} + \sqrt{2}\,i$ $\lvert z\rvert$; $\arg(z)$	$\begin{cases}u_0 = -3\\u_{n+1} = -4u_n\end{cases}$ *terme général*
$f(x) = \left(7\cos x - \frac{5}{x^5}\right)\left(\frac{4}{x^4} + \frac{5}{x^2}\right)$ $f'(x) =$	$f(x) = \cos^8(5 + 2x)$ $f'(x) =$

31×29	$\lim\limits_{x \to -\infty} (x^5 + 11x^4 - 12x - 10)$
$\cos\left(\frac{\pi}{2} - x\right)$	$A\begin{pmatrix}-16\\4\end{pmatrix} et\ F\begin{pmatrix}7\\21\end{pmatrix}$ $\overrightarrow{AF}$
$z = \cos\frac{\pi}{2} + i\sin\frac{\pi}{2}$ $z =$	$f(x) = 9x^8 - x^8 + 8$ $F(x) =$
$z = -\sqrt{3} + i$ $\lvert z\rvert\ ; \arg(z)$	$\begin{cases} u_0 = -4 \\ u_{n+1} = -6u_n \end{cases}$ $u_{17} =$
$f(x) = -6\cos(-9x - 8)$ $f'(x) =$	$f(x) = \left(\frac{7}{x^9} - \frac{8}{x^3} - 6x^3\right)^{10}$ $f'(x) =$

$-\frac{3}{7}-\frac{6}{10}$		$\lim\limits_{x\to-1}(3x^7+11x^4-8x^3+2x)$
$-\cos\left(\frac{\pi}{2}-x\right)$		$D\begin{pmatrix}-25\\-3\end{pmatrix}et\ B\begin{pmatrix}-2\\7\end{pmatrix}$ $\overrightarrow{BD}$
$P(x)=-4x^2-8x$ $\sqrt{\Delta}=8$ $racines$		$f(x)=7x^7+2x^9-4x^2$ $F(x)=$
$z=-\sqrt{2}+\sqrt{2}\,i$ $\lvert z\rvert$; $\arg(z)$		$\begin{cases}u_0=-6\\u_{n+1}=u_n-6\end{cases}$ $u_{11}=$
$f(x)=(-7x^8+x^8)(10x^8-9x^6)$ $f'(x)=$		$f(x)=\left(x^{10}+\frac{5}{x^{10}}+3x^8\right)^2$ $f'(x)=$

$37^2 - 43^2$		$\lim\limits_{\substack{x \to -6 \\ x<-6}} \left(\dfrac{-x+1}{x+6}\right)$
$-\cos\left(x - \dfrac{\pi}{2}\right)$		$H\begin{pmatrix}-7\\2\end{pmatrix}$ et $E\begin{pmatrix}-7\\-5\end{pmatrix}$ $\left\|\overrightarrow{EH}\right\|$
$(5+6i)(5-6i)$		$f(x) = -\dfrac{2}{x^4} + \dfrac{5}{x^3} + x^4$ $F(x) =$
$z = \sqrt{2} + \sqrt{2}\,i$ $\lvert z\rvert$; $\arg(z)$		$\begin{cases} u_0 = -2 \\ u_{n+1} = 6u_n \end{cases}$ *terme général*
$f(x) = \dfrac{8x^7 + \dfrac{1}{x^3}}{-3\sin x}$ $f'(x) =$		$f(x) = \sin(-10x + 4)$ $f'(x) =$

$\frac{10}{8} - \frac{10}{1}$	$\lim_{x \to -\infty} \left(-\frac{2}{x^7}\right)$
$\sin\left(\frac{\pi}{2} - x\right)$	$D\begin{pmatrix}24\\10\end{pmatrix} et\ A\begin{pmatrix}-20\\-7\end{pmatrix}$ $\overrightarrow{AD}$
$P(x) = -2x^2 + 2x + 24$ $\sqrt{\Delta} = 14$ $racines$	$f(x) = -8x^3 - x^7 + 4x$ $F(x) =$
$z = 1 - 5i$ $\lvert z\rvert =$	$\begin{cases} u_0 = -6 \\ u_{n+1} = 1u_n \end{cases}$ $terme\ général$
$f(x) = \left(10x^7 - \frac{5}{x^3}\right)\left(\frac{9}{x^3} - \frac{2}{x^4}\right)$ $f'(x) =$	$f(x) = \cos^3(7 - 4x)$ $f'(x) =$

$\left(+\frac{4}{25}\right)\times\left(-\frac{30}{6}\right)$	$\lim\limits_{\substack{x\to -8\\ x>-8}}\left(\frac{x+10}{-8-x}\right)$
$-\cos\left(\frac{\pi}{2}-x\right)$	$C(9\,;\,20) et\ D(-16\,;\,14)$ $\overrightarrow{CD}$
$-49i-47i-43+21$	$f(x)=-7x^7-2\cos x+9x^8$ $F(x)=$
$z=\sqrt{2}-\sqrt{2}\,i$ $\lvert z\rvert\,;\arg(z)$	$\begin{cases}u_0=-4\\ u_{n+1}=u_n+9\end{cases}$ $terme\ général$
$f(x)=-2\cos(2x-7)$ $f'(x)=$	$f(x)=\cos^7(5-4x)$ $f'(x)=$

$-\frac{3}{8}+\frac{1}{3}$	$\lim\limits_{\substack{x\to 0\\ x<0}}\left(-\frac{1}{x^2}\right)$
$-\sin(\pi+x)$	$G(0\,;\,-15) et\ B(8\,;\,22)$ $\overrightarrow{BG}$
$P(x)=-5x^2\ -2-8x$ $\Delta=$	$f(x)=2\sin x+2x-\frac{7}{x^{10}}$ $F(x)=$
$z=-1$ $\lvert z\rvert\,;\arg(z)$	$\begin{cases}u_0=7\\ u_{n+1}=2u_n\end{cases}$ $u_7=$
$f(x)=(-x^9+\sin x)\left(\frac{-4}{x^4}-\frac{6}{x^3}\right)$ $f'(x)=$	$f(x)=\left(7x^{10}+\frac{5}{x^4}+\frac{5}{x^7}\right)^5$ $f'(x)=$

19^2		$\lim\limits_{x\to -1}\left(-\dfrac{1}{4x^3}\right)$
$\cos(-x)$		$C(-1\,;\,5) et\ A(2\,;\,8)$ $\left\|\left\|\overrightarrow{CA}\right\|\right\|$
$\|z\| = 10\,;\arg(z) = -\dfrac{\pi}{3}$ $z =$		$f(x) = 6x - 2x^9 - 4x^3$ $F(x) =$
$z = \sqrt{2}\,i - \sqrt{2}$ $\|z\|\,;\arg(z)$		$\begin{cases} u_0 = 2 \\ u_{n+1} = u_n - 3 \end{cases}$ $u_1 =$
$f(x) = \dfrac{3\cos x}{\dfrac{7}{x} - \dfrac{2}{x^2}}$ $f'(x) =$		$f(x) = \left(-\dfrac{7}{x^5} - 9 - \dfrac{5}{x^7}\right)^8$ $f'(x) =$

30^2	$\lim\limits_{\substack{x\to 0\\ x<0}} \left(-\frac{4}{x^9}\right)$
$-\cos(-x)$	$\vec{u}(-8\,;\,-1)\ et\ \vec{v}(9\,;\,10)$ $\vec{u}\cdot\vec{v}$
$\lvert z\rvert = 5\,;\arg(z) = -\frac{\pi}{3}$ $z =$	$f(x) = x^2 - \frac{5}{x^5} + \frac{7}{x^{10}}$ $F(x) =$
$z = \sqrt{2} + \sqrt{2}\,i$ $\lvert z\rvert\,;\arg(z)$	$\begin{cases} u_0 = -9 \\ u_{n+1} = 6u_n \end{cases}$ *terme général*
$f(x) = \dfrac{\frac{9}{x^6}}{\frac{-5}{x^3} - \frac{10}{x^{10}}}$ $f'(x) =$	$f(x) = \left(-\frac{3}{x^6} - \frac{7}{x^9} + \frac{5}{x^6}\right)^3$ $f'(x) =$

$\left(-\frac{3}{4}\right) \times \left(+\frac{1}{3}\right)$	$\lim\limits_{\substack{x \to 0 \\ x<0}} \left(\frac{11}{3x}\right)$
$\sin(-x)$	$\vec{u}(-1\ ;\ 7)\ et\ \vec{v}(6\ ;\ 3)$ $\vec{u} \cdot \vec{v}$
$\lvert z \rvert = 5\ ; \arg(z) = -\frac{2\pi}{4}$ $z =$	$f(x) = \frac{1}{x^6} - 3x - 2x$ $F(x) =$
$z = -3 + 3i$ $\lvert z \rvert =$	$\begin{cases} u_0 = 5 \\ u_{n+1} = 5u_n \end{cases}$ *terme général*
$f(x) = x^9 + 7\cos x - 9x^3$ $f'(x) =$	$f(x) = \left(-4x^9 + \frac{4}{x^6} - 10x^9\right)^3$ $f'(x) =$

$17^2 - 23^2$	$\lim\limits_{x \to -\infty} (-11x^5 - 8x^3 - 8x + 2)$
$-\cos\left(x - \frac{\pi}{2}\right)$	$E(0\ ;\ 20) et\ G(2\ ;\ 4)$ $\overrightarrow{EG}$
$z = \cos\pi + i\sin\pi$ $z =$	$f(x) = -7x + 3\sin x + 7\cos x$ $F(x) =$
$z = -\sqrt{3}\,i - 1$ $\lvert z\rvert\ ; \arg(z)$	$\begin{cases} u_0 = 9 \\ u_{n+1} = u_n - 4 \end{cases}$ $u_{12} =$
$f(x) = 5\cos(-10x - 7)$ $f'(x) =$	$f(x) = \left(5 + 9x^2 - \frac{9}{x^{10}}\right)^7$ $f'(x) =$

$\left(+\frac{20}{5}\right)\times\left(-\frac{25}{10}\right)$	$\lim\limits_{x\to-\infty}\left(\frac{11}{10x}\right)$
$\sin\left(\frac{\pi}{2}-x\right)$	$F(9\,;\,3) et\ D(-2\,;\,7)$ $\left\|\overrightarrow{FD}\right\|$
$P(x)=-2x^2\ -8+10x$ $\sqrt{\Delta}=6$ $racines$	$f(x)=10x^9+6x^6-4x^{10}$ $F(x)=$
$z=-\sqrt{3}+i$ $\|z\|\,;\arg(z)$	$\begin{cases}u_0=-7\\u_{n+1}=-8u_n\end{cases}$ $terme\ général$
$f(x)=-9\sin(3x+5)$ $f'(x)=$	$f(x)=\left(-\frac{8}{x^{10}}-2x^5\right)^{10}$ $f'(x)=$

$5^2 - 15^2$		$\lim\limits_{x \to -\infty} (-4x^5 + 7x^2 - 7)$
$\cos\left(\frac{\pi}{2} + x\right)$		$\vec{u}\begin{pmatrix}-2\\1\end{pmatrix}$ et $\vec{v}\begin{pmatrix}-3\\3\end{pmatrix}$ $\vec{u} \cdot \vec{v}$
$(-10i - 9)^2$		$f(x) = 7x + 4x - 7x^5$ $F(x) =$
$z = \sqrt{3} - i$ $\lvert z \rvert$; $\arg(z)$		$\begin{cases} u_0 = 2 \\ u_{n+1} = 0u_n \end{cases}$ $u_8 =$
$f(x) = \dfrac{9x^9}{3\cos x + \dfrac{9}{x^6}}$ $f'(x) =$		$f(x) = \left(\dfrac{3}{x^8} - 10x^2 + 9x^2\right)^7$ $f'(x) =$

$\left(-\frac{10}{15}\right) \times \left(+\frac{12}{5}\right)$	$\lim\limits_{x \to -\infty} \left(-\frac{7}{x^4}\right)$
$-\cos\left(x + \frac{\pi}{2}\right)$	$\vec{u}(-7\ ;\ -10)\ et\ \vec{v}(9\ ;\ 7)$ $\vec{u} \cdot \vec{v}$
$\lvert z \rvert = 1\ ; \arg(z) = \frac{2\pi}{4}$ $z =$	$f(x) = 10x + \frac{7}{x^3} - \frac{7}{x^6}$ $F(x) =$
$z = -1 + \sqrt{3}\, i$ $\lvert z \rvert\ ; \arg(z)$	$\begin{cases} u_0 = -1 \\ u_{n+1} = 8u_n \end{cases}$ *terme général*
$f(x) = -3x^3 + \frac{5}{x} + 9x^2$ $f'(x) =$	$f(x) = \left(-\frac{8}{x^5} + 4x^4 + 6x^8\right)^4$ $f'(x) =$

$\left(-\frac{3}{6}\right)\times\left(+\frac{3}{5}\right)$		$\lim\limits_{x\to-1}\left(-\frac{5}{11x^9}\right)$
$-\cos(x-\pi)$		$D(14\,;\,23) et\ A(24\,;\,1)$ $\overrightarrow{DA}$
$z=4\cos\left(-\frac{\pi}{2}\right)+4i\sin\left(-\frac{\pi}{2}\right)$ $z=$		$f(x)=2\sin x+3x^{10}-8x$ $F(x)=$
$z=-\sqrt{2}\,i-\sqrt{2}$ $\lvert z\rvert\,;\arg(z)$		$\begin{cases}u_0=-10\\u_{n+1}=u_n+2\end{cases}$ $terme\ général$
$f(x)=\frac{10x^4-9x}{-\cos x}$ $f'(x)=$		$f(x)=\left(2x-\frac{10}{x^5}-\frac{8}{x^6}\right)^2$ $f'(x)=$

23^2	$\lim\limits_{\substack{x\to 5\\ x>5}} \left(\dfrac{-x-6}{5-x}\right)$
$-\sin\left(x-\dfrac{\pi}{2}\right)$	$\vec{u}(7\,;\,5)\ et\ \vec{v}(4\,;\,-6)$ $\vec{u}\cdot\vec{v}$
$(9+3i)(9-3i)$	$f(x)=9\sin x-x^{10}+6$ $F(x)=$
$z=-1+\sqrt{3}\,i$ $\lvert z\rvert\,;\arg(z)$	$\begin{cases}u_0=8\\ u_{n+1}=u_n+3\end{cases}$ $terme\ général$
$f(x)=4x-7\cos x+3x^3$ $f'(x)=$	$f(x)=(6x^6-2x^2-2x^8)^3$ $f'(x)=$

$\left(+\frac{10}{8}\right)\times\left(-\frac{10}{8}\right)$	$\lim\limits_{x\to+1}\left(\frac{9}{x^8}\right)$
$\cos(x-\pi)$	$F(6\,;\,5) et\ H(-9\,;\,-2)$ $\left\|\overrightarrow{FH}\right\|$
$\|z\|=6\,;\arg(z)=\pi$ $z=$	$f(x)=-6x^7+6x^{10}-3x^{10}$ $F(x)=$
$z=-1-3i$ $\|z\|=$	$\begin{cases}u_0=-6\\u_{n+1}=-5u_n\end{cases}$ *terme général*
$f(x)=\left(\frac{1}{x^3}+7x\right)\left(\frac{2}{x^6}+x^8\right)$ $f'(x)=$	$f(x)=\cos(-2x+1)$ $f'(x)=$

$32^2 - 28^2$	$\lim\limits_{\substack{x\to 0 \\ x>0}} \left(\frac{10}{x^3}\right)$
$-\sin(x+\pi)$	$\vec{u}(-10\ ;\ 10)\ et\ \vec{v}(0\ ;\ 5)$ $\vec{u}\cdot\vec{v}$
$P(x) = -3x^2 + 18x - 24$ $\sqrt{\Delta} = 6$ $racines$	$f(x) = -9\cos x + \sin x + 8$ $F(x) =$
$z = 10 + 2i$ $\lvert z\rvert =$	$\begin{cases} u_0 = -7 \\ u_{n+1} = u_n - 1 \end{cases}$ $u_2 =$
$f(x) = (3x - 9\cos x)\left(7\cos x + \frac{1}{x^4}\right)$ $f'(x) =$	$f(x) = \sin^3(-5-8x)$ $f'(x) =$

$\left(+\frac{15}{4}\right)\times\left(-\frac{10}{25}\right)$	$\lim\limits_{x\to-1}(11x^6+12x^4-7x^3+3)$
$\sin(x-\pi)$	$B\begin{pmatrix}16\\-23\end{pmatrix}$ *et* $H\begin{pmatrix}-14\\19\end{pmatrix}$ $\overrightarrow{BH}$
$(6+6i)^2$	$f(x)=x^3+9x^9-\frac{9}{x^3}$ $F(x)=$
$z=7+8i$ $\lvert z\rvert=$	$\begin{cases}u_0=-7\\u_{n+1}=5u_n\end{cases}$ *terme général*
$f(x)=4\cos(-x+1)$ $f'(x)=$	$f(x)=\left(-3x^6-\frac{8}{x}+\frac{7}{x^9}\right)^6$ $f'(x)=$

$-\frac{9}{4}-\frac{2}{1}$	$\lim\limits_{\substack{x\to 0\\ x<0}}\left(\frac{7}{x^3}\right)$
$\sin\left(x-\frac{\pi}{2}\right)$	$H(17\,;\,-3) et\ E(-7\,;\,16)$ $\overrightarrow{EH}$
$(1+7i)(1-7i)$	$f(x)=\cos x+5x-9x^8$ $F(x)=$
$z=-i-\sqrt{3}$ $\lvert z\rvert\,;\arg(z)$	$\begin{cases}u_0=1\\ u_{n+1}=u_n+2\end{cases}$ $u_4=$
$f(x)=\left(6x^5+7\sqrt{x}\right)\left(\frac{-10}{x^5}-\frac{8}{x^{10}}\right)$ $f'(x)=$	$f(x)=\left(3x^6+\frac{6}{x}\right)^8$ $f'(x)=$

5×15	$\lim\limits_{\substack{x \to 0 \\ x<0}} \left(-\frac{4}{x^2}\right)$
$-\cos\left(\frac{\pi}{2}+x\right)$	$D\begin{pmatrix}10\\-10\end{pmatrix} et\ F\begin{pmatrix}8\\-3\end{pmatrix}$ $\left\|\overrightarrow{DF}\right\|$
$z = 3\cos\frac{\pi}{2} + 3i\sin\frac{\pi}{2}$ $z =$	$f(x) = \frac{3}{x^2} + \frac{7}{x^{10}} + 6x^9$ $F(x) =$
$z = 1 + i$ $\lvert z\rvert =$	$\begin{cases} u_0 = 10 \\ u_{n+1} = u_n - 5 \end{cases}$ $u_{18} =$
$f(x) = -5x - 3\sqrt{x} - 8x^7$ $f'(x) =$	$f(x) = \left(-7 + \frac{10}{x} + 6x^9\right)^6$ $f'(x) =$

$38^2 - 42^2$	$\lim\limits_{\substack{x \to -5 \\ x<-5}} \left(\dfrac{-x+6}{x+5}\right)$
$-\sin(-x)$	$C(2\,;\,-7) et\ D(-9\,;\,8)$ $\left\|\overrightarrow{CD}\right\|$
$P(x) = -3x^2 - 9 + 12x$ $\sqrt{\Delta} = 6$ $racines$	$f(x) = 5x^8 - 1 + 2x$ $F(x) =$
$z = -5 + i$ $\|z\| =$	$\begin{cases} u_0 = -8 \\ u_{n+1} = 0u_n \end{cases}$ $terme\ général$
$f(x) = -3\cos(10x - 6)$ $f'(x) =$	$f(x) = \sin^4(5 + 4x)$ $f'(x) =$

$27^2 - 33^2$	$\lim\limits_{x \to -\infty} \left(\dfrac{8x^2 - 9x - 11}{-12x^2 + 8x + 9} \right)$
$-\cos\left(x + \dfrac{\pi}{2}\right)$	$D \begin{pmatrix} 16 \\ -25 \end{pmatrix}$ et $G \begin{pmatrix} 0 \\ 14 \end{pmatrix}$ $\overrightarrow{GD}$
$(1 + i)(1 - 4i)$	$f(x) = -\dfrac{8}{x^5} - 3x^{10} + 8x^6$ $F(x) =$
$z = -i + \sqrt{3}$ $\lvert z \rvert$; $\arg(z)$	$\begin{cases} u_0 = 2 \\ u_{n+1} = 6u_n \end{cases}$ $u_{17} =$
$f(x) = -3\sin(4x + 3)$ $f'(x) =$	$f(x) = \cos(1 - 3x)$ $f'(x) =$

$-\frac{2}{6}-\frac{8}{3}$		$\lim\limits_{x\to-\infty}\left(\frac{-8x^2+6x\ +3}{8x^2+10x\ +6}\right)$
$-\cos\left(x+\frac{\pi}{2}\right)$		$D(2\ ;\ -24) et\ A(7\ ;\ -14)$ $\overrightarrow{AD}$
$P(x)=-5x^2\ +5x+30$ $\sqrt{\Delta}=25$ $racines$		$f(x)=4x+\frac{6}{x^2}-\frac{8}{x^8}$ $F(x)=$
$z=4+4i$ $\lvert z\rvert=$		$\begin{cases}u_0=7\\u_{n+1}=3u_n\end{cases}$ $terme\ général$
$f(x)=\frac{\frac{-3}{x^3}}{3x^9-\frac{9}{x^8}}$ $f'(x)=$		$f(x)=\left(\frac{4}{x}-\frac{2}{x^2}+4x^2\right)^5$ $f'(x)=$

$\frac{2}{3}+\frac{4}{6}$		$\lim\limits_{\substack{x\to 0\\ x>0}} \left(\frac{3}{5x^{10}}\right)$
$\cos(x-\pi)$		$B\begin{pmatrix}-6\\23\end{pmatrix} et\ A\begin{pmatrix}10\\6\end{pmatrix}$ $\overrightarrow{AB}$
$(5i+7)(-6i-8)$		$f(x)=-\frac{9}{x^6}-\frac{1}{x^9}+6x^4$ $F(x)=$
$z=\sqrt{3}\,i-1$ $\lvert z\rvert\,;\arg(z)$		$\begin{cases}u_0=7\\u_{n+1}=u_n+8\end{cases}$ $u_{13}=$
$f(x)=8\cos(-3x+9)$ $f'(x)=$		$f(x)=\sin^2(-8x-1)$ $f'(x)=$

11×9		$\lim\limits_{x \to -\infty} (-8x^6 + 5x^4 - 2x + 2)$
$\cos\left(\frac{\pi}{2} + x\right)$		$E\begin{pmatrix}-8\\-6\end{pmatrix} et\ D\begin{pmatrix}-6\\19\end{pmatrix}$ $\overrightarrow{ED}$
$(6i + 5)(5i - 3)$		$f(x) = 7 + 7x + 4x$ $F(x) =$
$z = \sqrt{2} - \sqrt{2}\, i$ $\lvert z \rvert$; $\arg(z)$		$\begin{cases} u_0 = -5 \\ u_{n+1} = u_n + 3 \end{cases}$ $u_{10} =$
$f(x) = \frac{-7x + 2x^7}{-8x^9}$ $f'(x) =$		$f(x) = \cos^9(4 + 3x)$ $f'(x) =$

53×47	$\lim\limits_{x \to +\infty} \left(-\dfrac{11}{12x^{10}} \right)$
$-\cos(x + \pi)$	$G \begin{pmatrix} -6 \\ -23 \end{pmatrix}$ *et* $F \begin{pmatrix} 14 \\ 5 \end{pmatrix}$ $\overrightarrow{FG}$
$(7 + 11i)(7 - 11i)$	$f(x) = -\dfrac{9}{x^8} + 2x^4 - \dfrac{1}{x^6}$ $F(x) =$
$z = -2 - 9i$ $\lvert z \rvert =$	$\begin{cases} u_0 = -4 \\ u_{n+1} = u_n - 4 \end{cases}$ *terme général*
$f(x) = 2\sin x - 6x - \dfrac{5}{x^9}$ $f'(x) =$	$f(x) = (-10x^2 + 8x^4)^3$ $f'(x) =$

34×26	$\lim\limits_{x \to +\infty} \left(\dfrac{x^2 + 11x + 9}{11x^2 + 12} \right)$
$\cos(\pi - x)$	$E \begin{pmatrix} 2 \\ -3 \end{pmatrix} et\ A \begin{pmatrix} 3 \\ -6 \end{pmatrix}$ $\left\| \overrightarrow{AE} \right\|$
$\lvert z \rvert = 1\ ; \arg(z) = -\dfrac{3\pi}{4}$ $z =$	$f(x) = -\cos x - 2x - 10x$ $F(x) =$
$z = -10 - 3i$ $\lvert z \rvert =$	$\begin{cases} u_0 = -7 \\ u_{n+1} = u_n + 5 \end{cases}$ $terme\ général$
$f(x) = 6\cos(2x - 6)$ $f'(x) =$	$f(x) = (2x^5 + 4x^4 + 5)^6$ $f'(x) =$

$45^2 - 55^2$	$\lim\limits_{x \to +\infty} \left(\frac{1}{8x^6}\right)$
$-\cos\left(x + \frac{\pi}{2}\right)$	$\vec{u}\begin{pmatrix}7\\-5\end{pmatrix}$ et $\vec{v}\begin{pmatrix}7\\0\end{pmatrix}$ $\vec{u} \cdot \vec{v}$
$(-8i - 3)(-10 + 3i)$	$f(x) = -x^6 - 2x^5 - x^3$ $F(x) =$
$z = -5 - 6i$ $\lvert z \rvert =$	$\begin{cases} u_0 = 8 \\ u_{n+1} = 4u_n \end{cases}$ $u_{16} =$
$f(x) = \left(\frac{3}{x} + \frac{1}{x^6}\right)\left(\frac{8}{x^6} - 4x\right)$ $f'(x) =$	$f(x) = \cos^9(-2x + 1)$ $f'(x) =$

$42^2 - 38^2$	$\lim\limits_{x \to -1} \left(\frac{11}{4x^7}\right)$
$\sin\left(x - \frac{\pi}{2}\right)$	$\vec{u}(-5\ ;\ 9)\ et\ \vec{v}(0\ ;\ -4)$ $\vec{u} \cdot \vec{v}$
$(11i + 1)^2$	$f(x) = 9x^{10} - 10x^9 + 4$ $F(x) =$
$z = 4 - 8i$ $\lvert z \rvert =$	$\begin{cases} u_0 = 4 \\ u_{n+1} = u_n + 4 \end{cases}$ $u_{19} =$
$f(x) = \left(\frac{-1}{x^2} - 9x^8\right)\left(\frac{-2}{x^4} - \frac{6}{x^3}\right)$ $f'(x) =$	$f(x) = \sin^3(x + 7)$ $f'(x) =$

12×8		$\lim\limits_{x \to +1} (2x^8 + 8x^7 + 9x^5 - 9x^2)$
$-\cos\left(x - \frac{\pi}{2}\right)$		$\vec{u}(-2\,;\,-7)$ *et* $\vec{v}(10\,;\,7)$ $\vec{u} \cdot \vec{v}$
$\lvert z \rvert = 4\,; \arg(z) = -\frac{\pi}{2}$ $z =$		$f(x) = -2x^4 - 7x^9 + 8x^6$ $F(x) =$
$z = 6 - 6i$ $\lvert z \rvert =$		$\begin{cases} u_0 = 9 \\ u_{n+1} = 8u_n \end{cases}$ *terme général*
$f(x) = -10\cos(x - 7)$ $f'(x) =$		$f(x) = \cos^2(-x + 5)$ $f'(x) =$

$\frac{5}{3}+\frac{10}{8}$	$\lim\limits_{x\to+\infty}\left(\frac{6x^2+9x\ -10}{-4x^2+3x\ -5}\right)$
$\cos\left(x-\frac{\pi}{2}\right)$	$B(2\ ;\ 6) et\ C(10\ ;\ 1)$ $\left\|\overrightarrow{CB}\right\|$
$P(x)=-4x^2\ +16+12x$ $\sqrt{\Delta}=20$ $racines$	$f(x)=-\frac{81}{x^2}-\frac{6}{x^9}$ $F(x)=$
$z=-7+2i$ $\|z\|=$	$\begin{cases}u_0=-9\\u_{n+1}=u_n-1\end{cases}$ $u_{12}=$
$f(x)=-5\sin(-9x-4)$ $f'(x)=$	$f(x)=\cos^5(-5-x)$ $f'(x)=$

$\frac{1}{7}+\frac{8}{2}$	$\lim\limits_{x\to+\infty}\left(-\frac{9}{x^6}\right)$
$\cos\left(x+\frac{\pi}{2}\right)$	$\vec{u}\begin{pmatrix}-4\\1\end{pmatrix}$ *et* $\vec{v}\begin{pmatrix}-9\\-5\end{pmatrix}$ $\vec{u}\cdot\vec{v}$
$P(x)=5x-2x^2\ -2$ $\Delta=$	$f(x)=7x^5-\frac{2}{x^4}+9\cos x$ $F(x)=$
$z=7-10i$ $\lvert z\rvert=$	$\begin{cases}u_0=-5\\u_{n+1}=u_n+1\end{cases}$ *terme général*
$f(x)=6x-7x^{10}+8\sin x$ $f'(x)=$	$f(x)=\sin^9(10x-8)$ $f'(x)=$

$\left(+\frac{15}{12}\right)\times\left(+\frac{12}{10}\right)$		$\lim\limits_{x\to+\infty}(-8x^8+3x^7-7x^3+2x)$
$\cos(-x)$		$D(6\,;\,23) et\ G(-7\,;\,-21)$ $\overrightarrow{DG}$
$P(x)=-12+x+x^2$ $\sqrt{\Delta}=7$ $racines$		$f(x)=-10x^7-\frac{7}{x^4}+7x$ $F(x)=$
$z=-9+10i$ $\lvert z\rvert=$		$\begin{cases}u_0=-6\\u_{n+1}=u_n+8\end{cases}$ $terme\ général$
$f(x)=\frac{\frac{-9}{x^2}+\frac{7}{x^2}}{-6\cos x}$ $f'(x)=$		$f(x)=\left(-\frac{10}{x^{10}}+\frac{1}{x^{10}}-\frac{8}{x^8}\right)^{10}$ $f'(x)=$

51×49	$\lim\limits_{\substack{x \to -4 \\ x > -4}} \left(\dfrac{-x-1}{-x-4}\right)$
$\cos\left(\dfrac{\pi}{2} - x\right)$	$\vec{u}(9\ ;\ 10)\ et\ \vec{v}(1\ ;\ -7)$ $\vec{u} \cdot \vec{v}$
$(11i - 6)^2$	$f(x) = 2x^2 + 3x^5 + \sin x$ $F(x) =$
$z = 1 + i$ $\lvert z \rvert =$	$\begin{cases} u_0 = 5 \\ u_{n+1} = u_n + 2 \end{cases}$ $u_{17} =$
$f(x) = (7x^8 - 6x^2)(-10\cos x + 7x^2)$ $f'(x) =$	$f(x) = \left(-10x^5 + \dfrac{3}{x^4} + \dfrac{4}{x^7}\right)^3$ $f'(x) =$

$51^2 - 49^2$	$\lim\limits_{x \to -\infty} (-3x^3 + 7x^2 + 2x + 2)$
$\sin\left(\frac{\pi}{2} + x\right)$	$E(14\,;\,-9) et\ B(18\,;\,6)$ $\overrightarrow{EB}$
$P(x) = -10 + 15x - 5x^2$ $\sqrt{\Delta} = 5$ $racines$	$f(x) = 2x^2 + x^3 - 6\sin x$ $F(x) =$
$z = 10 - 7i$ $\lvert z \rvert =$	$\begin{cases} u_0 = -10 \\ u_{n+1} = u_n - 7 \end{cases}$ $terme\ général$
$f(x) = 4\sin(8x - 6)$ $f'(x) =$	$f(x) = (8x^9 - 10x^7 - 2)^4$ $f'(x) =$

14^2		$\lim\limits_{x\to+\infty}\left(\dfrac{-2x^2+4x\ +9}{x^2+x\ -1}\right)$
$-\sin\left(\dfrac{\pi}{2}-x\right)$		$A\begin{pmatrix}22\\0\end{pmatrix}et\ B\begin{pmatrix}8\\2\end{pmatrix}$ $\overrightarrow{BA}$
$\lvert z\rvert=1\ ;\arg(z)=-\dfrac{\pi}{2}$ $z=$		$f(x)=-5x^5-7x^8-7x^4$ $F(x)=$
$z=1-\sqrt{3}\,i$ $\lvert z\rvert\ ;\arg(z)$		$\begin{cases}u_0=7\\u_{n+1}=u_n-7\end{cases}$ $terme\ général$
$f(x)=\left(4x^2+\dfrac{10}{x^8}\right)(-7x^7+7\cos x)$ $f'(x)=$		$f(x)=\sin^5(7+9x)$ $f'(x)=$

15×25	$\lim\limits_{x \to -\infty} \left(-\frac{8}{7x^2}\right)$
$\sin(-x)$	$G\begin{pmatrix}-2\\1\end{pmatrix} et\ D\begin{pmatrix}-5\\0\end{pmatrix}$ $\left\|\overrightarrow{GD}\right\|$
$-5i - 35 + 30 - 29i$	$f(x) = 3\cos x - 6\sin x - 5x$ $F(x) =$
$z = \sqrt{2}\, i + \sqrt{2}$ $\|z\|$; $\arg(z)$	$\begin{cases} u_0 = -3 \\ u_{n+1} = 2u_n \end{cases}$ $u_2 =$
$f(x) = 10x + x - 7\sin x$ $f'(x) =$	$f(x) = \left(\frac{4}{x^3} - 2x^8\right)^9$ $f'(x) =$

53×47	$\lim\limits_{x \to +\infty} \left(\dfrac{-5x^2 + 5x - 4}{-12x - 4} \right)$
$\sin(x + \pi)$	$\vec{u}\begin{pmatrix} 8 \\ -4 \end{pmatrix}$ *et* $\vec{v}\begin{pmatrix} 1 \\ 9 \end{pmatrix}$ $\vec{u} \cdot \vec{v}$
$(3 + 5i)(10i + 10)$	$f(x) = \dfrac{8}{x^5} - 3x^7 - 8x$ $F(x) =$
$z = \sqrt{2}\, i - \sqrt{2}$ $\lvert z \rvert$; $\arg(z)$	$\begin{cases} u_0 = 8 \\ u_{n+1} = -2u_n \end{cases}$ *terme général*
$f(x) = 2\sin(10x - 4)$ $f'(x) =$	$f(x) = \left(-\dfrac{9}{x^2} + \dfrac{4}{x^9} + 4x^5 \right)^4$ $f'(x) =$

39×41	$\lim\limits_{\substack{x \to 0 \\ x>0}} \left(\frac{12}{x^8}\right)$
$-\sin\left(x + \frac{\pi}{2}\right)$	$A(-11\,;\,-13) et\ F(-24\,;\,-11)$ $\overrightarrow{FA}$
$(-9 + 7i)(6i + 9)$	$f(x) = -3x - \frac{1}{x^5} + x^3$ $F(x) =$
$z = -1 + \sqrt{3}\, i$ $\lvert z \rvert\,;\arg(z)$	$\begin{cases} u_0 = -10 \\ u_{n+1} = u_n + 8 \end{cases}$ $u_3 =$
$f(x) = \frac{\frac{6}{x^{10}}}{3x^8 + x^2}$ $f'(x) =$	$f(x) = \left(-\frac{10}{x^3} - \frac{2}{x^6} + \frac{1}{x^9}\right)^4$ $f'(x) =$

$\left(+\frac{4}{10}\right)\times\left(+\frac{6}{1}\right)$	$\lim\limits_{\substack{x\to -6\\ x>-6}}\left(\frac{-8+x}{-6-x}\right)$
$-\cos(-x)$	$A\begin{pmatrix}-21\\-24\end{pmatrix} et\ D\begin{pmatrix}-8\\7\end{pmatrix}$ $\overrightarrow{DA}$
$z=\cos\frac{\pi}{2}+i\sin\frac{\pi}{2}$ $z=$	$f(x)=-5-8\cos x-\frac{8}{x^5}$ $F(x)=$
$z=-2-8i$ $\lvert z\rvert=$	$\begin{cases}u_0=8\\u_{n+1}=u_n-2\end{cases}$ $u_6=$
$f(x)=9\sin(-x-8)$ $f'(x)=$	$f(x)=\left(-8x+\frac{8}{x^{10}}+\frac{3}{x^2}\right)^3$ $f'(x)=$

$\left(+\frac{4}{5}\right)\times\left(+\frac{15}{12}\right)$	$\lim\limits_{x\to+\infty}\left(\frac{-9x^2-10x\ -4}{8x^2-10x\ +3}\right)$
$\sin(x-\pi)$	$C(-5\ ;\ -4) et\ E(0\ ;\ -4)$ $\left\|\overrightarrow{EC}\right\|$
$\|z\|=9\ ;\arg(z)=-\frac{\pi}{2}$ $z=$	$f(x)=-\frac{5}{x^{10}}+\frac{5}{x^3}-2$ $F(x)=$
$z=-\sqrt{3}+i$ $\|z\|\ ;\arg(z)$	$\begin{cases}u_0=8\\u_{n+1}=-3u_n\end{cases}$ $u_8=$
$f(x)=9\sin(7x-5)$ $f'(x)=$	$f(x)=\left(\frac{4}{x^2}-9x^7-x^2\right)^7$ $f'(x)=$

$\frac{1}{6} - \frac{6}{10}$	$\lim\limits_{\substack{x \to -4 \\ x > -4}} \left(\frac{x-1}{x+4}\right)$
$\cos(x + \pi)$	$\vec{u}\begin{pmatrix}-7\\-1\end{pmatrix}$ et $\vec{v}\begin{pmatrix}10\\-4\end{pmatrix}$ $\vec{u} \cdot \vec{v}$
$(9i - 7)(-9 + i)$	$f(x) = -\frac{8}{x^8} - 9x^5 - 4x^3$ $F(x) =$
$z = -\sqrt{2}\, i - \sqrt{2}$ $\lvert z \rvert$; $\arg(z)$	$\begin{cases} u_0 = -8 \\ u_{n+1} = u_n - 2 \end{cases}$ $u_5 =$
$f(x) = -3\sin(-x - 6)$ $f'(x) =$	$f(x) = \sin^9(-8 + 9x)$ $f'(x) =$

$\left(-\frac{36}{10}\right)\times\left(-\frac{20}{30}\right)$	$\lim\limits_{\substack{x\to 10\\ x<10}}\left(\frac{-x+8}{x-10}\right)$
$-\sin\left(\frac{\pi}{2}-x\right)$	$E(-1\,;\,-17) et\ G(12\,;\,20)$ $\overrightarrow{EG}$
$P(x)=9x+20+x^2$ $\sqrt{\Delta}=1$ $racines$	$f(x)=\frac{6}{x^{10}}-10x^3-6x^4$ $F(x)=$
$z=-9-5i$ $\lvert z\rvert=$	$\begin{cases}u_0=8\\ u_{n+1}=1u_n\end{cases}$ $u_3=$
$f(x)=\frac{7x^9}{\frac{-2}{x}+\frac{9}{x^9}}$ $f'(x)=$	$f(x)=\left(-\frac{4}{x^6}+9x^4-4x^5\right)^2$ $f'(x)=$

$\frac{7}{7}+\frac{9}{9}$	$\lim\limits_{x\to-\infty}\left(\frac{-x^2-2x\ -1}{-11x^2+4x\ -1}\right)$
$-\cos(x+\pi)$	$F\begin{pmatrix}4\\7\end{pmatrix} et\ A\begin{pmatrix}-3\\-8\end{pmatrix}$ $\left\|\overrightarrow{FA}\right\|$
$(-6+i)(3i-5)$	$f(x)=-7x^{10}-\frac{7}{x^7}-2x^6$ $F(x)=$
$z=-7+i$ $\|z\|=$	$\begin{cases}u_0=-2\\u_{n+1}=6u_n\end{cases}$ $u_2=$
$f(x)=\frac{4x^2}{\frac{-3}{x^2}-\frac{1}{x^{10}}}$ $f'(x)=$	$f(x)=\sin^3(4+3x)$ $f'(x)=$

21^2	$\lim\limits_{x\to+\infty}(-5x^4+12x^2+11x+5)$
$\cos\left(\frac{\pi}{2}+x\right)$	$C(7\,;\,-4) et\ E(-7\,;\,-7)$ $\|\overrightarrow{EC}\|$
$P(x)=6x-4-4x^2$ $\Delta=$	$f(x)=-4x-7x^{10}+5x^9$ $F(x)=$
$z=-i+\sqrt{3}$ $\|z\|\,;\arg(z)$	$\begin{cases}u_0=1\\u_{n+1}=7u_n\end{cases}$ *terme général*
$f(x)=\dfrac{9x}{\frac{-3}{x^{10}}+\frac{2}{x^5}}$ $f'(x)=$	$f(x)=\left(-\frac{2}{x^5}-\frac{5}{x^{10}}-8x^2\right)^6$ $f'(x)=$

$48^2 - 52^2$	$\lim\limits_{x \to -\infty} \left(\dfrac{10x^2 + 4x\ - 2}{10x^2 + 4x\ - 12} \right)$
$\cos(\pi - x)$	$D(8\ ;\ -1) et\ A(-5\ ;\ 2)$ $\left\|\overrightarrow{AD}\right\|$
$\|z\| = 5\ ; \arg(z) = 0$ $z =$	$f(x) = 2\cos x - 5\cos x + \dfrac{6}{x^4}$ $F(x) =$
$z = 7 + i$ $\|z\| =$	$\begin{cases} u_0 = 6 \\ u_{n+1} = 1u_n \end{cases}$ *terme général*
$f(x) = \dfrac{\frac{6}{x^8} + \frac{5}{x^9}}{x^4}$ $f'(x) =$	$f(x) = (-8x^6 + 8x^8)^9$ $f'(x) =$

14^2	$\lim\limits_{x\to+\infty}\left(-\frac{4}{2x^4}\right)$
$\sin(\pi - x)$	$\vec{u}\begin{pmatrix}-5\\-2\end{pmatrix}$ et $\vec{v}\begin{pmatrix}-2\\-6\end{pmatrix}$ $\vec{u}\cdot\vec{v}$
$P(x) = -3x^2 + 5 + 4x$ $\Delta =$	$f(x) = -6x^4 - 2x - \frac{2}{x^3}$ $F(x) =$
$z = -6 + 7i$ $\lvert z\rvert =$	$\begin{cases}u_0 = 6\\u_{n+1} = u_n + 5\end{cases}$ $u_3 =$
$f(x) = \sin(-4x - 8)$ $f'(x) =$	$f(x) = \sin^3(-8 - 10x)$ $f'(x) =$

20^2		$\lim\limits_{x\to+\infty}\left(\dfrac{-4x^2+5x\ +3}{10x^2-x\ -9}\right)$
$\cos\left(x-\dfrac{\pi}{2}\right)$		$G(5\ ;\ -5) et\ A(2\ ;\ 5)$ $\left\|\overrightarrow{GA}\right\|$
$P(x)=-3x-3x^2$ $\Delta=$		$f(x)=\cos x+x^{10}+2x^{10}$ $F(x)=$
$z=\sqrt{3}-i$ $\|z\|\ ;\arg(z)$		$\begin{cases}u_0=0\\u_{n+1}=-3u_n\end{cases}$ $u_1=$
$f(x)=\left(-8\sqrt{x}+x^4\right)\left(\dfrac{4}{x^5}+x\right)$ $f'(x)=$		$f(x)=\left(-3x^{10}+\dfrac{7}{x^{10}}\right)^9$ $f'(x)=$

$-\frac{3}{8}+\frac{2}{8}$		$\lim\limits_{x\to+\infty}\left(-\frac{5}{x^3}\right)$
$-\cos(\pi-x)$		$\vec{u}(6\ ;\ 1)\ et\ \vec{v}(-7\ ;\ -1)$ $\vec{u}\cdot\vec{v}$
$(7+5i)(-9i+7)$		$f(x)=2x-\frac{7}{x^5}+x^4$ $F(x)=$
$z=\sqrt{2}+\sqrt{2}\,i$ $\lvert z\rvert\ ;\arg(z)$		$\begin{cases}u_0=1\\u_{n+1}=u_n+4\end{cases}$ $u_{17}=$
$f(x)=3\sin(x+8)$ $f'(x)=$		$f(x)=\sin^2(8-9x)$ $f'(x)=$

27×33	$\lim\limits_{\substack{x \to -3 \\ x > -3}} \left(\dfrac{-9 - x}{x + 3} \right)$
$\sin\left(\dfrac{\pi}{2} + x\right)$	$\vec{u}\begin{pmatrix} 9 \\ 1 \end{pmatrix}$ et $\vec{v}\begin{pmatrix} 10 \\ -7 \end{pmatrix}$ $\vec{u} \cdot \vec{v}$
$(5 - 5i)(-10i - 4)$	$f(x) = -x^2 + 4\cos x - 6x$ $F(x) =$
$z = 8 - 2i$ $\lvert z \rvert =$	$\begin{cases} u_0 = 1 \\ u_{n+1} = 4u_n \end{cases}$ $u_5 =$
$f(x) = -7\cos(3x - 3)$ $f'(x) =$	$f(x) = \left(- - \dfrac{4}{x^{10}} + 10x^4 \right)^3$ $f'(x) =$

$54^2 - 46^2$		$\lim\limits_{x \to +1} \left(\frac{5}{x^8}\right)$
$\sin(\pi - x)$		$\vec{u}(-4\ ;\ -9)\ et\ \vec{v}(10\ ;\ -9)$ $\vec{u} \cdot \vec{v}$
$-34i - 44 + 27i + 4$		$f(x) = -3x^6 - 10x^{10} - 2x^4$ $F(x) =$
$z = 8 - 6i$ $\lvert z \rvert =$		$\begin{cases} u_0 = 9 \\ u_{n+1} = u_n - 4 \end{cases}$ *terme général*
$f(x) = \dfrac{-x^2 + 8x^9}{\dfrac{-1}{x^9}}$ $f'(x) =$		$f(x) = \left(-7x^8 - 7x + \dfrac{6}{x^6}\right)^5$ $f'(x) =$