Entrainement TSTI2D :

Contenu

16^2	$\lim\limits_{\substack{x\to 0\\ x<0}} \left(\frac{5}{x^4}\right)$
$\sin\left(\frac{\pi}{2} - x\right)$	$C\begin{pmatrix}15\\-12\end{pmatrix} et\ E\begin{pmatrix}-18\\24\end{pmatrix}$ $\overrightarrow{CE}$
$-43 + 14i - 38i - 10$	$f(x) = -x^2 - 9x^3 - 3x$ $F(x) =$
$P(x) = 2x^2 + 24 - 14x$ $\sqrt{\Delta} = 2$ $racines$	$\begin{cases}u_0 = -5\\u_{n+1} = 5u_n\end{cases}$ $u_{12} =$
$f(x) = \dfrac{4x}{x^{10} + \dfrac{7}{x^9}}$ $f'(x) =$	$f(x) = (7x^5 - 7x^2 + 7x^{10})^5$ $f'(x) =$

24×16	$\lim\limits_{x \to -\infty} \left(-\frac{12}{x^5}\right)$
$\sin(-x)$	$\vec{u}\begin{pmatrix}7\\9\end{pmatrix}$ *et* $\vec{v}\begin{pmatrix}9\\-7\end{pmatrix}$ $\vec{u} \cdot \vec{v}$
$(5+2i)^2$	$f(x) = -7x^2 + x^2 - 6x^8$ $F(x) =$
$P(x) = -x^2 + 1 - 4x$ $\Delta =$	$\begin{cases} u_0 = -1 \\ u_{n+1} = u_n - 3 \end{cases}$ *terme général*
$f(x) = \dfrac{4x^2}{\frac{1}{x^3} - \frac{2}{x^5}}$ $f'(x) =$	$f(x) = \left(4x^9 - 6 - \frac{7}{x^4}\right)^5$ $f'(x) =$

24×16	$\lim\limits_{\substack{x \to 0 \\ x<0}} \left(\frac{4}{8x^3}\right)$
$-\cos(-x)$	$F\begin{pmatrix}4\\-10\end{pmatrix} et\ H\begin{pmatrix}10\\-5\end{pmatrix}$ $\overrightarrow{FH}$
$z = \sqrt{3}\, i + 1$ $\lvert z \rvert\ ; \arg(z)$	$f(x) = -7x + 3x^7 + 10x^9$ $F(x) =$
$P(x) = 5x^2 - 2x - 5$ $\Delta =$	$\begin{cases} u_0 = 3 \\ u_{n+1} = u_n - 4 \end{cases}$ $u_4 =$
$f(x) = \dfrac{\frac{6}{x^6}}{-6x^8 + 9x^2}$ $f'(x) =$	$f(x) = (4x^7 + 7x^9 - 7x^7)^2$ $f'(x) =$

$\left(-\frac{10}{15}\right)\times\left(-\frac{18}{6}\right)$	$\lim\limits_{x\to+\infty}\left(-\frac{9}{12x^2}\right)$
$\sin(x+\pi)$	$F(-19\,;\,11) et\ E(-14\,;\,-18)$ $\overrightarrow{FE}$
$\lvert z\rvert = 1\,;\arg(z) = -\frac{2\pi}{3}$ $z =$	$f(x) = -\frac{7}{x^7} - 5x^5$ $F(x) =$
$P(x) = -2x^2 + 10x$ $\sqrt{\Delta} = 10$ $racines$	$\begin{cases} u_0 = -7 \\ u_{n+1} = u_n + 2 \end{cases}$ $u_5 =$
$f(x) = (-7x^3 + 5x^{10})(3x - 5x)$ $f'(x) =$	$f(x) = \cos^2(-5x+1)$ $f'(x) =$

$\left(+\frac{24}{10}\right)\times\left(+\frac{15}{30}\right)$	$\lim\limits_{\substack{x\to 0\\ x<0}}\left(-\frac{8}{x^8}\right)$
$-\sin\left(\frac{\pi}{2}-x\right)$	$G\begin{pmatrix}13\\7\end{pmatrix}$ et $B\begin{pmatrix}24\\-1\end{pmatrix}$ $\overrightarrow{BG}$
$z=2\cos\left(-\frac{2\pi}{3}\right)+2i\sin\left(-\frac{2\pi}{3}\right)$ $z=$	$f(x)=3x^4+3x^6-5x^7$ $F(x)=$
$P(x)=10x+4-x^2$ $\Delta=$	$\begin{cases}u_0=-5\\u_{n+1}=u_n+6\end{cases}$ $u_{10}=$
$f(x)=(-2x^9+5x^9)(-3x^8-3x^8)$ $f'(x)=$	$f(x)=\sin^4(3+9x)$ $f'(x)=$

19^2	$\lim\limits_{x\to+\infty}\left(\dfrac{12}{3x^{10}}\right)$
$\cos(\pi - x)$	$E(22\,;\,-6) et\ C(6\,;\,-22)$ $\overrightarrow{EC}$
$-31i + 6 - 24i - 29$	$f(x) = -5 + \dfrac{8}{x^9} - \dfrac{10}{x^4}$ $F(x) =$
$P(x) = -x^2 + 2 + 5x$ $\Delta =$	$\begin{cases} u_0 = 2 \\ u_{n+1} = -9u_n \end{cases}$ $u_2 =$
$f(x) = \dfrac{-4x^4 - 5x^7}{\dfrac{-8}{x^3}}$ $f'(x) =$	$f(x) = \left(-\dfrac{6}{x^4} + 2x^5 - \dfrac{3}{x^3}\right)^8$ $f'(x) =$

$7^2 - 13^2$	$\lim\limits_{x \to -\infty} \left(-\frac{6}{x^5}\right)$
$-\cos(-x)$	$D(-1\,;\,5) et\ A(1\,;\,-9)$ $\left\|\overrightarrow{AD}\right\|$
$-23i + i + 17 - 5$	$f(x) = -2x^3 - 10x^{10} - 5x^7$ $F(x) =$
$P(x) = x^2\ - 2 + 10x$ $\Delta =$	$\begin{cases} u_0 = -9 \\ u_{n+1} = u_n - 1 \end{cases}$ *terme général*
$f(x) = (4x^7 + 6x^9)(8x^2 + x^9)$ $f'(x) =$	$f(x) = (4x^{10} - 3x^5 - 6x^{10})^8$ $f'(x) =$

21×19	$\lim\limits_{\substack{x \to 11 \\ x>11}} \left(\dfrac{1+x}{-11+x}\right)$
$-\sin\left(\dfrac{\pi}{2}-x\right)$	$C(18\,;\,1) et\ H(-6\,;\,0)$ $\overrightarrow{HC}$
$z=-3-9i$ $\lvert z\rvert =$	$f(x)=-4x+6x^9+4x^8$ $F(x)=$
$P(x)=x^2\ +3+4x$ $\sqrt{\Delta}=2$ $racines$	$\begin{cases} u_0=-3 \\ u_{n+1}=u_n+2 \end{cases}$ $terme\ général$
$f(x)=\dfrac{2x^{10}+2\sqrt{x}}{\sqrt{x}}$ $f'(x)=$	$f(x)=\sin^8(9+4x)$ $f'(x)=$

$15^2 - 25^2$	$\lim\limits_{x \to +\infty} \left(\dfrac{-x^2 - 6x\ - 8}{8x^2 + 6x\ + 6} \right)$
$-\cos\left(\dfrac{\pi}{2} - x\right)$	$H(21\ ;\ -18) et\ E(-23\ ;\ -13)$ $\overrightarrow{EH}$
$(-5i + 1)(-5i - 6)$	$f(x) = -9x^6 + 4x^4 + 7x^6$ $F(x) =$
$P(x) = 12x - 4x^2\ + 40$ $\sqrt{\Delta} = 28$ $racines$	$\begin{cases} u_0 = 5 \\ u_{n+1} = u_n - 4 \end{cases}$ $u_{20} =$
$f(x) = -4x^4 - 3x^3 + \dfrac{9}{x}$ $f'(x) =$	$f(x) = (-9x^4 + 9x^9)^9$ $f'(x) =$

$\left(-\frac{3}{18}\right)\times\left(+\frac{3}{2}\right)$	$\lim\limits_{x\to-\infty}\left(-\frac{1}{x^{10}}\right)$
$-\sin(x-\pi)$	$A(-1\,;\,-2) et\ E(6\,;\,-10)$ $\left\|\left\|\overrightarrow{AE}\right\|\right\|$
$(-3i-6)^2$	$f(x)=-\cos x+8x^5-9$ $F(x)=$
$P(x)=-3x^2\ +9-6x$ $\sqrt{\Delta}=12$ $racines$	$\begin{cases}u_0=8\\u_{n+1}=6u_n\end{cases}$ $terme\ général$
$f(x)=(-10x^{10}+9x^4)(10x^9+4x^6)$ $f'(x)=$	$f(x)=\sin^3(-9x-5)$ $f'(x)=$

7×13	$\lim\limits_{\substack{x \to 10 \\ x>10}} \left(\dfrac{-x-19}{-10+x}\right)$
$-\cos(-x)$	$C(-21\ ;\ 6) et\ F(-14\ ;\ 6)$ $\overrightarrow{CF}$
$z = -8-6i$ $\lvert z \rvert =$	$f(x) = x + \dfrac{4}{x^3} + x^9$ $F(x) =$
$P(x) = 100 - 4x^2$ $\sqrt{\Delta} = 40$ $racines$	$\begin{cases} u_0 = 3 \\ u_{n+1} = 10u_n \end{cases}$ $terme\ général$
$f(x) = \dfrac{-5x^6}{\dfrac{-10}{x^{10}} + 10x}$ $f'(x) =$	$f(x) = (-6x^{10} + 6x^9 - 9x^9)^8$ $f'(x) =$

13^2	$\lim_{x\to-\infty}\left(\frac{3}{x^8}\right)$
$-\cos(-x)$	$D\begin{pmatrix}25\\-23\end{pmatrix}$ et $C\begin{pmatrix}1\\-4\end{pmatrix}$ $\overrightarrow{DC}$
$(7+6i)^2$	$f(x)=-9x-\frac{5}{x^4}-9x^6$ $F(x)=$
$P(x)=x^2\ -5+3x$ $\Delta=$	$\begin{cases}u_0=1\\u_{n+1}=5u_n\end{cases}$ *terme général*
$f(x)=\frac{4}{x}-2\sin x+9x^3$ $f'(x)=$	$f(x)=\cos^2(2+8x)$ $f'(x)=$

12^2	$\lim\limits_{x\to+\infty}\left(\dfrac{-12x^2-18x\ -13}{-7x^2+4x\ -9}\right)$
$\cos\left(\dfrac{\pi}{2}+x\right)$	$F(-7\ ;\ -8) et\ G(-3\ ;\ -1)$ $\left\|\overrightarrow{FG}\right\|$
$z=\ i$ $\|z\|\ ;\arg(z)$	$f(x)=4x^7+\dfrac{2}{x^4}+\dfrac{7}{x^7}$ $F(x)=$
$P(x)=-4x^2\ +8x+60$ $\sqrt{\Delta}=32$ $racines$	$\begin{cases}u_0=-8\\u_{n+1}=-6u_n\end{cases}$ $terme\ général$
$f(x)=(5x+3x^7)\left(7\sqrt{x}-7x^5\right)$ $f'(x)=$	$f(x)=\left(-\dfrac{8}{x^6}-\dfrac{1}{x^5}+4x^5\right)^9$ $f'(x)=$

16^2	$\lim\limits_{x\to+\infty}\left(\dfrac{9x^2+18x\ -4}{-19x^2-19x\ +2}\right)$
$\sin\left(\dfrac{\pi}{2}+x\right)$	$\vec{u}\begin{pmatrix}4\\5\end{pmatrix}$ *et* $\vec{v}\begin{pmatrix}6\\-2\end{pmatrix}$ $\vec{u}\cdot\vec{v}$
$z=-6-7i$ $\lvert z\rvert=$	$f(x)=-7x^2-x^4+10x^5$ $F(x)=$
$P(x)=-2x^2\ -3+6x$ $\Delta=$	$\begin{cases}u_0=10\\u_{n+1}=u_n-10\end{cases}$ *terme général*
$f(x)=\dfrac{4}{x^8}+5\sqrt{x}-5x^{10}$ $f'(x)=$	$f(x)=(9x^8-3x^2-4)^8$ $f'(x)=$

14×6		$\lim\limits_{x \to +1} \left(-\frac{6}{x^3}\right)$
$\sin(-x)$		$\vec{u}\begin{pmatrix}2\\-3\end{pmatrix}$ et $\vec{v}\begin{pmatrix}-4\\0\end{pmatrix}$ $\vec{u} \cdot \vec{v}$
$z = \sqrt{2} - \sqrt{2}\, i$ $\lvert z \rvert$; $\arg(z)$		$f(x) = -6x^2 + 8 - 8x^2$ $F(x) =$
$P(x) = -16 + x^2$ $\sqrt{\Delta} = 8$ $racines$		$\begin{cases} u_0 = 0 \\ u_{n+1} = 1u_n \end{cases}$ $u_{18} =$
$f(x) = \dfrac{9\sqrt{x} - \dfrac{6}{x^6}}{\dfrac{-4}{x^3}}$ $f'(x) =$		$f(x) = (-1)^7$ $f'(x) =$

$\frac{4}{4}+\frac{7}{4}$	$\lim\limits_{x\to-\infty}\left(\frac{-3x^2-2x-12}{6x-2}\right)$
$-\cos(\pi+x)$	$A\begin{pmatrix}-19\\23\end{pmatrix}$ et $F\begin{pmatrix}-25\\20\end{pmatrix}$ $\overrightarrow{AF}$
$z=7\cos\left(-\frac{4\pi}{6}\right)+7i\sin\left(-\frac{4\pi}{6}\right)$ $z=$	$f(x)=2x^9+3x^6-x$ $F(x)=$
$P(x)=8x-x^2-16$ $\sqrt{\Delta}=0$ $racines$	$\begin{cases}u_0=-5\\u_{n+1}=u_n-5\end{cases}$ $u_1=$
$f(x)=\frac{10\sqrt{x}}{-7\sqrt{x}-\frac{7}{x}}$ $f'(x)=$	$f(x)=\left(\frac{5}{x^7}-\frac{4}{x^{10}}+3x^{10}\right)^8$ $f'(x)=$

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

$-\frac{1}{9}-\frac{1}{6}$	$\lim\limits_{x\to+\infty}(9x^2-6x+9)$
$\sin\left(\frac{\pi}{2}-x\right)$	$B(-8\,;\,5) et\ F(5\,;\,-9)$ $\left\|\overrightarrow{BF}\right\|$
$P(x)=4x^2\ -24x+20$ $\sqrt{\Delta}=16$ $racines$	$f(x)=-8x^{10}-\frac{4}{x^3}-\frac{5}{x^4}$ $F(x)=$
$P(x)=4x^2\ -24x+20$ $\sqrt{\Delta}=16$ $racines$	$\begin{cases}u_0=6\\u_{n+1}=2u_n\end{cases}$ $u_{20}=$
$f(x)=\frac{-2}{x^4}+\frac{10}{x^7}-\sqrt{x}$ $f'(x)=$	$f(x)=\cos^3(1-7x)$ $f'(x)=$

$-\frac{8}{8}+\frac{1}{5}$	$\lim_{x\to+\infty}\left(-\frac{9}{x^5}\right)$
$\sin(\pi+x)$	$\vec{u}\begin{pmatrix}6\\0\end{pmatrix}$ *et* $\vec{v}\begin{pmatrix}0\\-2\end{pmatrix}$ $\vec{u}\cdot\vec{v}$
$z=2+3i$ $\lvert z\rvert=$	$f(x)=3x^9+9x^2-5x^{10}$ $F(x)=$
$P(x)=x^2+5x-3$ $\Delta=$	$\begin{cases}u_0=2\\u_{n+1}=u_n-4\end{cases}$ *terme général*
$f(x)=-3x-x^2-2\sin x$ $f'(x)=$	$f(x)=\sin^6(-10+4x)$ $f'(x)=$

$\left(+\frac{8}{16}\right)\times\left(+\frac{16}{8}\right)$	$\lim\limits_{x\to+\infty}(-5x^6-3x^2-4x+9)$
$-\cos\left(\frac{\pi}{2}-x\right)$	$D(-17\,;\,-1) et\ H(-21\,;\,25)$ $\overrightarrow{HD}$
$(10+8i)(10-8i)$	$f(x)=-2x^8-2x^8+x^5$ $F(x)=$
$P(x)=-2x^2-6x+3$ $\Delta=$	$\begin{cases}u_0=7\\u_{n+1}=u_n-7\end{cases}$ *terme général*
$f(x)=(8x^4+8x^9)\left(-3x^3-8\sqrt{x}\right)$ $f'(x)=$	$f(x)=\cos^8(-5+6x)$ $f'(x)=$

$-\frac{4}{8}-\frac{2}{6}$	$\lim\limits_{x\to+1}\left(\frac{6x^2+x\ -10}{15x^2-13x\ -18}\right)$
$-\cos\left(x-\frac{\pi}{2}\right)$	$F(1\ ;\ -24) et\ E(11\ ;\ 0)$ $\overrightarrow{EF}$
$27i-27-21i-13$	$f(x)=-5x^9+2x^7-7\sin x$ $F(x)=$
$P(x)=-5x^2\ -25x-30$ $\sqrt{\Delta}=5$ $racines$	$\begin{cases}u_0=-1\\u_{n+1}=0u_n\end{cases}$ $terme\ général$
$f(x)=\left(6x+6\sqrt{x}\right)\left(\sqrt{x}-10x^7\right)$ $f'(x)=$	$f(x)=\left(-4-\frac{2}{x^8}+4x^2\right)^7$ $f'(x)=$

$\left(+\frac{9}{3}\right)\times\left(-\frac{6}{9}\right)$	$\lim\limits_{x\to+\infty}\left(-\frac{5}{x^7}\right)$
$\sin(x-\pi)$	$C\begin{pmatrix}-12\\8\end{pmatrix}et\ B\begin{pmatrix}20\\19\end{pmatrix}$ $\overrightarrow{BC}$
$z=2\cos\left(-\frac{\pi}{2}\right)+2i\sin\left(-\frac{\pi}{2}\right)$ $z=$	$f(x)=6x^9-10x^{10}-8x^2$ $F(x)=$
$P(x)=4x-4x^2$ $\sqrt{\Delta}=4$ $racines$	$\begin{cases}u_0=-3\\u_{n+1}=-10u_n\end{cases}$ $u_{15}=$
$f(x)=(-2x^8-8x)(-2x+2x^4)$ $f'(x)=$	$f(x)=\sin^9(8+9x)$ $f'(x)=$

$\left(+\frac{25}{6}\right)\times\left(+\frac{30}{5}\right)$	$\lim\limits_{\substack{x\to 0\\ x>0}}\left(\frac{6}{x^8}\right)$
$-\sin\left(x-\frac{\pi}{2}\right)$	$E\begin{pmatrix}8\\-2\end{pmatrix}$ et $H\begin{pmatrix}-9\\10\end{pmatrix}$ $\left\|\overrightarrow{EH}\right\|$
$P(x)=-2x^2+6x-4$ $\sqrt{\Delta}=2$ $racines$	$f(x)=-8x^8+8\cos x-5\sin x$ $F(x)=$
$P(x)=4x^2+2x+5$ $\Delta=$	$\begin{cases}u_0=-8\\u_{n+1}=3u_n\end{cases}$ $terme\ général$
$f(x)=(-9x^{10}-10x^7)\left(-10\sqrt{x}+x\right)$ $f'(x)=$	$f(x)=(-9x^5+10x^8)^2$ $f'(x)=$

17^2	$\lim\limits_{x\to+\infty}\left(-\dfrac{6}{x^{10}}\right)$
$-\cos\left(x-\dfrac{\pi}{2}\right)$	$E(-1\,;\,-7) et\ C(0\,;\,6)$ $\left\|\overrightarrow{EC}\right\|$
$(-i-7)^2$	$f(x)=-6x^5-2x-4x^7$ $F(x)=$
$P(x)=4x^2\ +2+6x$ $\Delta=$	$\begin{cases}u_0=-5\\u_{n+1}=-5u_n\end{cases}$ *terme général*
$f(x)=(2x^9-6x^8)(-5x^5+4x^3)$ $f'(x)=$	$f(x)=\cos^7(9-6x)$ $f'(x)=$

$\left(+\frac{12}{18}\right)\times\left(-\frac{24}{9}\right)$	$\lim\limits_{\substack{x\to 11\\ x<11}}\left(\frac{16-x}{11-x}\right)$
$\sin\left(\frac{\pi}{2}+x\right)$	$H\begin{pmatrix}-10\\2\end{pmatrix}$ et $G\begin{pmatrix}-9\\4\end{pmatrix}$ $\left\|\overrightarrow{GH}\right\|$
$39+46+22i-45i$	$f(x)=-5-4x^7-\frac{3}{x^9}$ $F(x)=$
$P(x)=-4x^2-8x+12$ $\sqrt{\Delta}=16$ $racines$	$\begin{cases}u_0=-3\\u_{n+1}=7u_n\end{cases}$ $u_{11}=$
$f(x)=\frac{5\sqrt{x}}{\frac{10}{x^5}-\frac{2}{x^4}}$ $f'(x)=$	$f(x)=\left(\frac{1}{x^3}-\frac{10}{x^9}-x^3\right)^3$ $f'(x)=$

$8^2 - 12^2$	$\lim\limits_{x \to +\infty} \left(\dfrac{-12x^2 - 17x + 9}{-4x^2 - 18x - 4} \right)$
$-\cos(-x)$	$\vec{u}(-1\,;\,-3)\ et\ \vec{v}(-9\,;\,-7)$ $\vec{u} \cdot \vec{v}$
$(10i + 4)(-6i - 3)$	$f(x) = 2x^3 + 2x^4 + x^2$ $F(x) =$
$P(x) = x^2 + 5 + 6x$ $\Delta =$	$\begin{cases} u_0 = 10 \\ u_{n+1} = 5u_n \end{cases}$ $u_{17} =$
$f(x) = -\sqrt{x} - 2x^4 - \dfrac{8}{x^6}$ $f'(x) =$	$f(x) = \left(-\dfrac{1}{x^6} + \dfrac{8}{x^2} - \dfrac{3}{x^8} \right)^2$ $f'(x) =$

$13^2 - 7^2$	$\lim\limits_{x \to -\infty} (-2x^9 + 3x^4 + 4x^3 + 1)$
$-\sin\left(\frac{\pi}{2} - x\right)$	$\vec{u}(4\ ;\ -6)\ et\ \vec{v}(-2\ ;\ 10)$ $\vec{u} \cdot \vec{v}$
$z = 3 + 6i$ $\lvert z \rvert =$	$f(x) = +6x^4 + \frac{4}{x^8}$ $F(x) =$
$P(x) = -x^2 - 16 - 8x$ $\sqrt{\Delta} = 0$ $racines$	$\begin{cases} u_0 = 9 \\ u_{n+1} = 0u_n \end{cases}$ $u_{18} =$
$f(x) = \frac{8\sqrt{x}}{8x^9 - 10x^9}$ $f'(x) =$	$f(x) = (4x^{10} + 5x^8 - 4x^4)^8$ $f'(x) =$

$\left(-\frac{3}{36}\right)\times\left(-\frac{6}{1}\right)$	$\lim\limits_{x\to-\infty}\left(\frac{-4x^2-9x\ -1}{3x^2+11x\ -15}\right)$
$-\sin(x+\pi)$	$\vec{u}\begin{pmatrix}10\\3\end{pmatrix}\ et\ \vec{v}\begin{pmatrix}1\\10\end{pmatrix}$ $\vec{u}\cdot\vec{v}$
$z=10\cos\pi+10i\sin\pi$ $z=$	$f(x)=\frac{4}{x^2}+4x^9-9x^{10}$ $F(x)=$
$P(x)=-2x^2\ +24-2x$ $\sqrt{\Delta}=14$ $racines$	$\begin{cases}u_0=2\\u_{n+1}=u_n-3\end{cases}$ $u_4=$
$f(x)=\frac{-2x^{10}+\frac{1}{x^5}}{\frac{-1}{x^5}}$ $f'(x)=$	$f(x)=\left(-\frac{2}{x^7}+\frac{8}{x^{10}}+\frac{9}{x^7}\right)^7$ $f'(x)=$

$\frac{9}{5} - \frac{8}{3}$	$\lim\limits_{\substack{x \to 14 \\ x<14}} \left(\frac{-2-x}{-14+x}\right)$
$-\cos\left(\frac{\pi}{2} - x\right)$	$\vec{u}(4\,;\,-10)\ et\ \vec{v}(-8\,;\,-4)$ $\vec{u} \cdot \vec{v}$
$6 + 5i - 43 + 5i$	$f(x) = -3x + x^2 + 4x^7$ $F(x) =$
$P(x) = -5x^2 + 5x + 5$ $\Delta =$	$\begin{cases} u_0 = 9 \\ u_{n+1} = 6u_n \end{cases}$ $u_{15} =$
$f(x) = \dfrac{x}{\frac{3}{x^9} + 10\sqrt{x}}$ $f'(x) =$	$f(x) = (10x^4 - 5x^7 + 8x^3)^2$ $f'(x) =$

14×6	$\lim\limits_{x \to -\infty} (4x^9 - 12x^6 + 4x^5 - 3x^3)$
$-\cos(-x)$	$\vec{u}\begin{pmatrix}-3\\6\end{pmatrix}$ et $\vec{v}\begin{pmatrix}6\\1\end{pmatrix}$ $\vec{u} \cdot \vec{v}$
$\lvert z \rvert = 1$; $\arg(z) = \pi$ $z =$	$f(x) = \frac{6}{x^3} + 8x^{10} - 4x$ $F(x) =$
$P(x) = -10x + 1 - 5x^2$ $\Delta =$	$\begin{cases} u_0 = -6 \\ u_{n+1} = u_n + 9 \end{cases}$ $u_5 =$
$f(x) = \left(2\sqrt{x} - x^{10}\right)(-7x^2 + x)$ $f'(x) =$	$f(x) = \sin^6(-8x - 3)$ $f'(x) =$

$-\frac{1}{10}+\frac{2}{2}$	$\lim_{x\to+\infty}(-8x^6+9x^2+3x+3)$
$\sin(x+\pi)$	$H\begin{pmatrix}17\\-15\end{pmatrix}et\ G\begin{pmatrix}-14\\24\end{pmatrix}$ $\overrightarrow{HG}$
$z=7\cos\frac{\pi}{2}+7i\sin\frac{\pi}{2}$ $z=$	$f(x)=9x^{10}-8+5x^3$ $F(x)=$
$P(x)=-5x+4-3x^2$ $\Delta=$	$\begin{cases}u_0=10\\u_{n+1}=-10u_n\end{cases}$ $u_{14}=$
$f(x)=6x^3-3x^7+\frac{7}{x^9}$ $f'(x)=$	$f(x)=(-9x^4-x^7+7x^3)^5$ $f'(x)=$

$31^2 - 29^2$	$\lim_{x \to -\infty} \left(\frac{1}{x^2}\right)$
$-\cos\left(\frac{\pi}{2} + x\right)$	$F\begin{pmatrix}7\\6\end{pmatrix} et\ H\begin{pmatrix}3\\-9\end{pmatrix}$ $\left\|\overrightarrow{HF}\right\|$
$z = 7\cos\frac{2\pi}{3} + 7i\sin\frac{2\pi}{3}$ $z =$	$f(x) = -10x^8 - 10x^4 + 9x$ $F(x) =$
$P(x) = 3x^2 - 3x$ $\sqrt{\Delta} = 3$ $racines$	$\begin{cases} u_0 = -5 \\ u_{n+1} = u_n - 7 \end{cases}$ $u_{10} =$
$f(x) = \frac{\frac{4}{x^6}}{-10\sqrt{x} + 5x^8}$ $f'(x) =$	$f(x) = (-6x^3 - 4x^8 + 5x^2)^9$ $f'(x) =$

$\frac{2}{1}-\frac{1}{8}$	$\lim\limits_{\substack{x\to -20\\ x>-20}} \left(\frac{-13-x}{20+x}\right)$
$\sin(x-\pi)$	$A(-23\,;\,6) et\ B(-4\,;\,-5)$ $\overrightarrow{BA}$
$(i-5)(-4i+10)$	$f(x)=-10x+2x^8+7x^5$ $F(x)=$
$P(x)=2x^2-18x+40$ $\sqrt{\Delta}=2$ $racines$	$\begin{cases} u_0=6 \\ u_{n+1}=u_n-10 \end{cases}$ $u_{11}=$
$f(x)=(-4x^{10}-7x^7)(-10x^7-6x^8)$ $f'(x)=$	$f(x)=(-10x^4+6x^2-6x^5)^8$ $f'(x)=$

$\left(+\frac{10}{15}\right)\times\left(-\frac{3}{2}\right)$	$\lim\limits_{x\to-\infty}\left(\frac{18x^2+9x\ +1}{16x^2+10x\ +10}\right)$
$\sin(-x)$	$E(-9\ ;\ 6) et\ D(-1\ ;\ -13)$ $\overrightarrow{ED}$
$\lvert z\rvert = 9\ ; \arg(z) = -\frac{3\pi}{6}$ $z =$	$f(x) = x^7 - 9x^3 - 9\sin x$ $F(x) =$
$P(x) = 2x^2\ - 10 + 8x$ $\sqrt{\Delta} = 12$ $racines$	$\begin{cases} u_0 = 6 \\ u_{n+1} = -5u_n \end{cases}$ $terme\ général$
$f(x) = \frac{6x^2}{-2x^{10} + \frac{1}{x^8}}$ $f'(x) =$	$f(x) = \left(9x^6 - \frac{7}{x^8} - \frac{4}{x^3}\right)^2$ $f'(x) =$

$\left(+\frac{20}{6}\right)\times\left(-\frac{12}{5}\right)$	$\lim\limits_{\substack{x\to 0\\ x>0}}\left(-\frac{12}{6x}\right)$
$-\sin(\pi+x)$	$B\begin{pmatrix}7\\8\end{pmatrix}$ et $A\begin{pmatrix}-10\\6\end{pmatrix}$ $\left\|\overrightarrow{BA}\right\|$
$(4+2i)(10i-6)$	$f(x)=7x^3-\frac{8}{x^3}+3$ $F(x)=$
$P(x)=5x^2\ -10-5x$ $\sqrt{\Delta}=15$ $racines$	$\begin{cases}u_0=-7\\u_{n+1}=u_n+9\end{cases}$ $terme\ général$
$f(x)=\frac{9x+\frac{1}{x^4}}{4x}$ $f'(x)=$	$f(x)=(3x^8+7x^7-5x^5)^{10}$ $f'(x)=$

20^2	$\lim\limits_{\substack{x\to 0\\ x>0}} \left(\frac{2}{10x}\right)$
$-\sin\left(x-\frac{\pi}{2}\right)$	$\vec{u}(-6\,;\,-8)\ et\ \vec{v}(0\,;\,-8)$ $\vec{u}\cdot\vec{v}$
$z = 9\cos\left(-\frac{2\pi}{3}\right) + 9i\sin\left(-\frac{2\pi}{3}\right)$ $z =$	$f(x) = x^8 - \frac{1}{x^2} - 2x^3$ $F(x) =$
$P(x) = 4x + 2x^2 - 3$ $\Delta =$	$\begin{cases} u_0 = -3 \\ u_{n+1} = 5u_n \end{cases}$ $u_{13} =$
$f(x) = x^{10} - 10x^9 - \frac{9}{x^{10}}$ $f'(x) =$	$f(x) = \sin(10x+6)$ $f'(x) =$

$11^2 - 9^2$	$\lim\limits_{x \to -\infty} (6x^8 + 2x^7 - 2x + 10)$
$-\sin(-x)$	$\vec{u}\begin{pmatrix}7\\8\end{pmatrix}$ et $\vec{v}\begin{pmatrix}-9\\-10\end{pmatrix}$ $\vec{u} \cdot \vec{v}$
$z = 8 - 6i$ $\lvert z \rvert =$	$f(x) = -x^6 + 5x^4 + 8x^5$ $F(x) =$
$P(x) = 5 - 8x - x^2$ $\Delta =$	$\begin{cases} u_0 = -2 \\ u_{n+1} = -3u_n \end{cases}$ $u_{15} =$
$f(x) = \left(-2x^7 + 10\sqrt{x}\right)(5x^8 + 10x)$ $f'(x) =$	$f(x) = \cos^7(2 - 2x)$ $f'(x) =$

27×33	$\lim\limits_{x \to -\infty} \left(\frac{1}{x^6}\right)$
$-\cos(x + \pi)$	$A(4\ ;\ 1) et\ G(-11\ ;\ -14)$ $\overrightarrow{GA}$
$(-9i + 9)(-8 + 3i)$	$f(x) = -3\cos x - 2\cos x + \sin x$ $F(x) =$
$P(x) = -4x^2 - 60 + 32x$ $\sqrt{\Delta} = 8$ $racines$	$\begin{cases} u_0 = -7 \\ u_{n+1} = u_n - 8 \end{cases}$ $terme\ général$
$f(x) = 4\sin x + 10x^{10} + \frac{9}{x^{10}}$ $f'(x) =$	$f(x) = \left(-\frac{3}{x^2} - 6x^2 + \frac{8}{x^4}\right)^4$ $f'(x) =$

$\left(-\frac{8}{12}\right)\times\left(-\frac{6}{20}\right)$	$\lim\limits_{x\to-\infty}\left(-\frac{9}{6x^9}\right)$
$-\sin(\pi+x)$	$G\begin{pmatrix}-1\\-7\end{pmatrix}$ *et* $F\begin{pmatrix}-8\\-10\end{pmatrix}$ $\left\|\overrightarrow{FG}\right\|$
$\|z\|=9\ ;\arg(z)=\frac{\pi}{2}$ $z=$	$f(x)=-8x+2x-6x^3$ $F(x)=$
$P(x)=-2-5x-4x^2$ $\Delta=$	$\begin{cases}u_0=1\\u_{n+1}=0u_n\end{cases}$ *terme général*
$f(x)=\frac{6x^2-5\sqrt{x}}{5x^7}$ $f'(x)=$	$f(x)=(8x^2-2x^{10}-7x^6)^3$ $f'(x)=$

9×11	$\lim\limits_{\substack{x \to 0 \\ x<0}} \left(\frac{12}{x}\right)$
$\cos(-x)$	$\vec{u}\begin{pmatrix}9\\4\end{pmatrix}$ *et* $\vec{v}\begin{pmatrix}-1\\2\end{pmatrix}$ $\vec{u} \cdot \vec{v}$
$z = 3\cos\pi + 3i\sin\pi$ $z =$	$f(x) = 3x + 5x^6 - 4\cos x$ $F(x) =$
$P(x) = 5x^2 + 30 + 25x$ $\sqrt{\Delta} = 5$ *racines*	$\begin{cases} u_0 = 7 \\ u_{n+1} = u_n - 4 \end{cases}$ *terme général*
$f(x) = \dfrac{\dfrac{-3}{x^3}}{4\sqrt{x} + 4x}$ $f'(x) =$	$f(x) = \cos^7(5 - 5x)$ $f'(x) =$

$\left(+\frac{15}{2}\right)\times\left(-\frac{4}{30}\right)$	$\lim\limits_{x\to-\infty}\left(\frac{16x^2-14x\ +10}{6x^2+20x\ +8}\right)$
$\cos\left(\frac{\pi}{2}-x\right)$	$A(-15\ ;\ 1) et\ D(-19\ ;\ 21)$ $\overrightarrow{AD}$
$z=\cos\left(-\frac{\pi}{2}\right)+i\sin\left(-\frac{\pi}{2}\right)$ $z=$	$f(x)=-8x^8-3x^5+3x^8$ $F(x)=$
$P(x)=-30x+3x^2\ +75$ $\sqrt{\Delta}=0$ $racines$	$\begin{cases}u_0=2\\u_{n+1}=-2u_n\end{cases}$ $terme\ général$
$f(x)=5\cos x-5x^2-3x^2$ $f'(x)=$	$f(x)=\left(-2x^4+7x^{10}+\frac{7}{x^6}\right)^4$ $f'(x)=$

$\left(-\frac{4}{6}\right)\times\left(+\frac{18}{2}\right)$	$\lim\limits_{x\to-\infty}\left(\frac{-x^2-20x\ +12}{-5x^2-9x\ +15}\right)$
$\sin\left(x+\frac{\pi}{2}\right)$	$\vec{u}(2\ ;\ -10)\ et\ \vec{v}(-3\ ;\ -9)$ $\vec{u}\cdot\vec{v}$
$\lvert z\rvert=1\ ;\arg(z)=\frac{\pi}{4}$ $z=$	$f(x)=3x+9x+9$ $F(x)=$
$P(x)=10x-4x^2\ +1$ $\Delta=$	$\begin{cases}u_0=-2\\u_{n+1}=1u_n\end{cases}$ $u_{20}=$
$f(x)=\frac{9\sqrt{x}-3x^5}{\frac{1}{x}}$ $f'(x)=$	$f(x)=\left(-6x^9+\frac{3}{x^3}-6x^3\right)^5$ $f'(x)=$

$15^2 - 25^2$	$\lim\limits_{\substack{x\to 0 \\ x>0}} \left(\frac{10}{12x^5}\right)$
$-\cos\left(\frac{\pi}{2} + x\right)$	$D\begin{pmatrix}-1\\-1\end{pmatrix} et\ F\begin{pmatrix}-25\\13\end{pmatrix}$ $\overrightarrow{FD}$
$P(x) = -2x^2 + 10x$ $\sqrt{\Delta} = 10$ $racines$	$f(x) = -3x^5 - 3x^2 + 10x^{10}$ $F(x) =$
$P(x) = 5x^2 - 7x + 3$ $\Delta =$	$\begin{cases}u_0 = 6\\u_{n+1} = u_n + 4\end{cases}$ $terme\ général$
$f(x) = \frac{\frac{2}{x^8} + 8x^7}{\sqrt{x}}$ $f'(x) =$	$f(x) = \left(\frac{5}{x^8} - 9x^2\right)^4$ $f'(x) =$

12^2	$\lim\limits_{\substack{x\to 0\\ x<0}} \left(-\frac{5}{x^8}\right)$
$-\sin(-x)$	$E(4\,;\,4) et\ B(3\,;\,-6)$ $\left\|\overrightarrow{BE}\right\|$
$-27i+36+22i-5$	$f(x)=6x^7-\frac{1}{x^9}-10x^9$ $F(x)=$
$P(x)=-5x^2+1-9x$ $\Delta=$	$\begin{cases}u_0=-6\\ u_{n+1}=6u_n\end{cases}$ *terme général*
$f(x)=(6x^2-9x^3)(-10x+9x^6)$ $f'(x)=$	$f(x)=(5x^7+3x^9-7x^3)^4$ $f'(x)=$

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

19×21	$\lim\limits_{x \to -\infty} \left(\dfrac{16x^2 - 12x + 6}{-16x^2 + 15x - 9} \right)$
$-\cos\left(\dfrac{\pi}{2} - x\right)$	$D\begin{pmatrix}10\\10\end{pmatrix} et\ A\begin{pmatrix}7\\8\end{pmatrix}$ $\|\|\overrightarrow{AD}\|\|$
$-41 + 21 + 35i + 5i$	$f(x) = -10x - 10 + 10x^2$ $F(x) =$
$P(x) = 4x^2 + 12 + 16x$ $\sqrt{\Delta} = 8$ $racines$	$\begin{cases} u_0 = -6 \\ u_{n+1} = u_n + 5 \end{cases}$ $u_{17} =$
$f(x) = (2x^6 + 9x^2)(4x^2 + 10x)$ $f'(x) =$	$f(x) = \sin^2(-9x + 4)$ $f'(x) =$

$\left(-\frac{5}{36}\right)\times\left(-\frac{12}{20}\right)$	$\lim\limits_{x\to+\infty}\left(\frac{10x^2-10x\ -19}{8x^2-12x\ +17}\right)$
$\sin\left(\frac{\pi}{2}-x\right)$	$E\begin{pmatrix}2\\9\end{pmatrix}$ et $G\begin{pmatrix}9\\-5\end{pmatrix}$ $\left\|\overrightarrow{GE}\right\|$
$\|z\|=5$; $\arg(z)=\frac{2\pi}{3}$ $z=$	$f(x)=6x^3-4x^2-4x^4$ $F(x)=$
$P(x)=-18+3x^2\ +3x$ $\sqrt{\Delta}=15$ $racines$	$\begin{cases}u_0=-3\\u_{n+1}=u_n+5\end{cases}$ $terme\ général$
$f(x)=\frac{8x^8+\frac{1}{x^{10}}}{6\sqrt{x}}$ $f'(x)=$	$f(x)=\left(6x^9+\frac{1}{x^5}+5x^4\right)^{10}$ $f'(x)=$

15^2	$\lim\limits_{\substack{x\to -17\\ x>-17}} \left(\dfrac{-x+18}{x+17}\right)$
$\cos(\pi - x)$	$\vec{u}\begin{pmatrix}-7\\-4\end{pmatrix}$ et $\vec{v}\begin{pmatrix}0\\-2\end{pmatrix}$ $\vec{u}\cdot\vec{v}$
$P(x) = -5x^2 - 5x$ $\sqrt{\Delta} = 5$ $racines$	$f(x) = -\dfrac{2}{x^4} - 4x^3 - 10x^5$ $F(x) =$
$P(x) = x^2 + 2 + 10x$ $\Delta =$	$\begin{cases}u_0 = -1\\u_{n+1} = 8u_n\end{cases}$ $u_{16} =$
$f(x) = 10x^4 - x^6 - 4x$ $f'(x) =$	$f(x) = \left(-\dfrac{1}{x^7}2x^4 + 10x^9\right)^5$ $f'(x) =$

$11^2 - 9^2$		$\lim\limits_{\substack{x \to 0 \\ x>0}} \left(\frac{1}{x}\right)$
$-\cos\left(x - \frac{\pi}{2}\right)$		$\vec{u}(6\,;\,-3)\ et\ \vec{v}(-8\,;\,-3)$ $\vec{u} \cdot \vec{v}$
$z = \sqrt{2} - \sqrt{2}\,i$ $\lvert z \rvert\,;\arg(z)$		$f(x) = 9x^8 - 5x + 2x^3$ $F(x) =$
$P(x) = -4 + 2x^2 + x$ $\Delta =$		$\begin{cases} u_0 = 9 \\ u_{n+1} = u_n - 1 \end{cases}$ $u_{17} =$
$f(x) = \frac{-4}{x^9} + \frac{1}{x^3} + 10\sqrt{x}$ $f'(x) =$		$f(x) = (-3x^6)^7$ $f'(x) =$

16×24	$\lim\limits_{x \to -\infty} (-6x^4 - x^2 - 6x + 7)$
$\sin\left(x - \frac{\pi}{2}\right)$	$\vec{u}\begin{pmatrix}-8\\2\end{pmatrix}$ et $\vec{v}\begin{pmatrix}-2\\-10\end{pmatrix}$ $\vec{u} \cdot \vec{v}$
$z = 5 + i$ $\lvert z \rvert =$	$f(x) = -x - \frac{1}{x^7} + 7$ $F(x) =$
$P(x) = 5x + 3 - 3x^2$ $\Delta =$	$\begin{cases} u_0 = -1 \\ u_{n+1} = u_n - 7 \end{cases}$ $u_1 =$
$f(x) = \frac{-4}{x^5} - 9x^5 - 8x^2$ $f'(x) =$	$f(x) = (-9x^3 - 4x + 6)^5$ $f'(x) =$

$\left(-\frac{4}{20}\right)\times\left(+\frac{12}{4}\right)$	$\lim\limits_{x\to-1}(-10x^{10}-11x^4-6x^2-7x)$
$-\cos(-x)$	$B\begin{pmatrix}-3\\-20\end{pmatrix}$ et $D\begin{pmatrix}21\\3\end{pmatrix}$ $\overrightarrow{DB}$
$z=\sqrt{2}\,i+\sqrt{2}$ $\lvert z\rvert\,;\arg(z)$	$f(x)=\frac{8}{x^5}-\frac{1}{x^7}+\frac{8}{x^9}$ $F(x)=$
$P(x)=-7x+2-4x^2$ $\Delta=$	$\begin{cases}u_0=5\\u_{n+1}=u_n+8\end{cases}$ $terme\ général$
$f(x)=6x^3+\sqrt{x}-7x^4$ $f'(x)=$	$f(x)=(-8x^5+7x^5-3x^7)^7$ $f'(x)=$

$\frac{5}{3}+\frac{6}{3}$	$\lim\limits_{x\to-\infty}\left(-\frac{9}{11x^7}\right)$
$-\cos(-x)$	$\vec{u}(9\ ;\ 3)\ et\ \vec{v}(7\ ;\ 9)$ $\vec{u}\cdot\vec{v}$
$\lvert z\rvert = 4\ ; \arg(z) = \frac{3\pi}{4}$ $z =$	$f(x) = x^3 - 5x^8 + 8x^2$ $F(x) =$
$P(x) = 4x^2\ - 2x - 3$ $\Delta =$	$\begin{cases} u_0 = -2 \\ u_{n+1} = -6u_n \end{cases}$ $u_{16} =$
$f(x) = \frac{1}{x^6} - 4x^7 - \frac{10}{x^5}$ $f'(x) =$	$f(x) = \left(\frac{9}{x^{10}}10x^5 + \frac{5}{x^3}\right)^{10}$ $f'(x) =$

14^2	$\lim\limits_{\substack{x\to 0\\ x>0}} \left(-\frac{7}{x^6}\right)$
$\cos\left(x+\frac{\pi}{2}\right)$	$\vec{u}\begin{pmatrix}6\\-8\end{pmatrix}$ et $\vec{v}\begin{pmatrix}-4\\3\end{pmatrix}$ $\vec{u}\cdot\vec{v}$
$(11+2i)(11-2i)$	$f(x)=-7x^6-8x^2-2x^3$ $F(x)=$
$P(x)=2x^2-8x$ $\sqrt{\Delta}=8$ $racines$	$\begin{cases}u_0=-2\\u_{n+1}=u_n-6\end{cases}$ $terme\ général$
$f(x)=\frac{-5}{x^2}-4x^7-\frac{10}{x}$ $f'(x)=$	$f(x)=\left(-6x^5+\frac{5}{x^9}-2x^5\right)^3$ $f'(x)=$

32×28	$\lim\limits_{\substack{x \to -11 \\ x<-11}} \left(\frac{5+x}{-11-x}\right)$
$-\sin\left(x-\frac{\pi}{2}\right)$	$A\begin{pmatrix}4\\10\end{pmatrix} et\ D\begin{pmatrix}0\\8\end{pmatrix}$ $\|\|\overrightarrow{AD}\|\|$
$P(x) = 2x^2 + 24 - 14x$ $\sqrt{\Delta} = 2$ $racines$	$f(x) = 9x^6 - 5x^9 + 8x^2$ $F(x) =$
$P(x) = 2x^2 + 24 - 14x$ $\sqrt{\Delta} = 2$ $racines$	$\begin{cases} u_0 = 1 \\ u_{n+1} = -9u_n \end{cases}$ $terme\ général$
$f(x) = \left(-10\sqrt{x} + 9x^8\right)\left(7x + 9\sqrt{x}\right)$ $f'(x) =$	$f(x) = (3x^5 + x^2 - 10x^{10})^3$ $f'(x) =$

$-\frac{1}{8}+\frac{7}{6}$	$\lim\limits_{\substack{x\to 0\\ x<0}} \left(\frac{6}{8x^6}\right)$
$\cos(-x)$	$C(-24\,;\,14) et\ D(14\,;\,3)$ $\overrightarrow{DC}$
$\lvert z\rvert = 7\,; \arg(z) = -\frac{\pi}{3}$ $z =$	$f(x) = -\frac{1}{x^3} + 3x^2 + \frac{10}{x^8}$ $F(x) =$
$P(x) = 4 - x + 5x^2$ $\Delta =$	$\begin{cases} u_0 = -2 \\ u_{n+1} = 3u_n \end{cases}$ $u_{18} =$
$f(x) = (-5x^{10} - 7x)(-4x^7 - 10x)$ $f'(x) =$	$f(x) = (-2x^3 - 3x^7)^2$ $f'(x) =$

$12^2 - 8^2$	$\lim\limits_{x \to -1} \left(-\frac{8}{x^3}\right)$
$\sin(\pi - x)$	$H\begin{pmatrix}-5\\13\end{pmatrix} et\ E\begin{pmatrix}21\\-16\end{pmatrix}$ $\overrightarrow{EH}$
$(8i - 5)(-9 - 2i)$	$f(x) = -4 + 8\cos x - 3x^4$ $F(x) =$
$P(x) = -40x + 4x^2 + 100$ $\sqrt{\Delta} = 0$ $racines$	$\begin{cases} u_0 = -4 \\ u_{n+1} = 9u_n \end{cases}$ $terme\ général$
$f(x) = (2x^8 + 5x^3)(7x^{10} + x)$ $f'(x) =$	$f(x) = (-7x^7 - 7x^4 + 8x^3)^6$ $f'(x) =$

$33^2 - 27^2$	$\lim\limits_{\substack{x\to 0\\ x>0}} \left(\frac{6}{12x^5}\right)$
$-\sin(-x)$	$B(-4\,;\,5) et\ F(-3\,;\,3)$ $\left\|\overrightarrow{BF}\right\|$
$P(x) = -3x^2 - 6 + 9x$ $\sqrt{\Delta} = 3$ $racines$	$f(x) = 8x^3 - 2\sin x + 4x^6$ $F(x) =$
$P(x) = -3x^2 - 8x - 4$ $\Delta =$	$\begin{cases} u_0 = 1 \\ u_{n+1} = -6u_n \end{cases}$ $terme\ général$
$f(x) = (-8x + x^{10})\left(-8x^2 - 5\sqrt{x}\right)$ $f'(x) =$	$f(x) = \sin^3(-5x - 4)$ $f'(x) =$

11×9	$\lim\limits_{x \to +\infty} (-8x^8 + 9x^6 + 5x^3)$
$-\sin\left(x - \frac{\pi}{2}\right)$	$B(-9\ ;\ 3) et\ H(-3\ ;\ 7)$ $\left\|\overrightarrow{HB}\right\|$
$z = -2 + i$ $\|z\| =$	$f(x) = 3x + x^5 + 8x^3$ $F(x) =$
$P(x) = 4x^2 - 2x - 5$ $\Delta =$	$\begin{cases} u_0 = 1 \\ u_{n+1} = 4u_n \end{cases}$ $u_4 =$
$f(x) = \frac{9\sqrt{x}}{\frac{-2}{x^2} - x^5}$ $f'(x) =$	$f(x) = \left(-\frac{10}{x^3} + \frac{3}{x^{10}} - 3x^9\right)^7$ $f'(x) =$

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

15×25		$\lim\limits_{x \to -1} \left(\frac{5}{x^3}\right)$
$\sin\left(x - \frac{\pi}{2}\right)$		$D(-9\,;\,-4) et\ A(3\,;\,3)$ $\left\|\overrightarrow{AD}\right\|$
$P(x) = 2x^2 - 18$ $\sqrt{\Delta} = 12$ $racines$		$f(x) = 4x^7 - 8x^5 - 8x^8$ $F(x) =$
$P(x) = 2x^2 - 18$ $\sqrt{\Delta} = 12$ $racines$		$\begin{cases} u_0 = 8 \\ u_{n+1} = 9u_n \end{cases}$ $u_1 =$
$f(x) = \frac{\frac{-9}{x^9} + x^{10}}{7x^7}$ $f'(x) =$		$f(x) = \sin^8(-8 - 4x)$ $f'(x) =$

$\frac{1}{2} - \frac{5}{10}$	$\lim\limits_{\substack{x \to 0 \\ x>0}} \left(\frac{11}{5x^8}\right)$
$-\cos(\pi + x)$	$C(-1\,;\,-8) et\ F(-4\,;\,4)$ $\left\|\overrightarrow{CF}\right\|$
$z = -9 + 9i$ $\|z\| =$	$f(x) = 8x^7 + \frac{4}{x^6} + \frac{7}{x^8}$ $F(x) =$
$P(x) = x + x^2 - 2$ $\sqrt{\Delta} = 3$ $racines$	$\begin{cases} u_0 = 3 \\ u_{n+1} = u_n + 8 \end{cases}$ $u_{14} =$
$f(x) = \frac{9}{x^4} + 10\sqrt{x} - \frac{10}{x^5}$ $f'(x) =$	$f(x) = \sin^2(4 - 6x)$ $f'(x) =$

$34^2 - 26^2$	$\lim\limits_{\substack{x \to 0 \\ x<0}} \left(\frac{2}{6x^2}\right)$
$-\cos\left(x - \frac{\pi}{2}\right)$	$\vec{u}(7\ ;\ -1)\ et\ \vec{v}(9\ ;\ 9)$ $\vec{u} \cdot \vec{v}$
$(2 - 2i)(3i - 6)$	$f(x) = 6\sin x + x^4 - \frac{6}{x^{10}}$ $F(x) =$
$P(x) = -2x^2 - 9x + 3$ $\Delta =$	$\begin{cases} u_0 = -4 \\ u_{n+1} = u_n + 4 \end{cases}$ $u_9 =$
$f(x) = \frac{-\sqrt{x} + \frac{7}{x^8}}{\frac{-7}{x^{10}}}$ $f'(x) =$	$f(x) = \cos^7(-3x - 6)$ $f'(x) =$

17^2	$\lim\limits_{\substack{x\to -14\\ x<-14}} \left(\dfrac{-x+12}{-x-14}\right)$
$\sin(-x)$	$E\begin{pmatrix}23\\23\end{pmatrix} et\ H\begin{pmatrix}19\\7\end{pmatrix}$ $\overrightarrow{HE}$
$19-40i+40+26i$	$f(x)=8-6x-3x^4$ $F(x)=$
$P(x)=2x^2-8x$ $\sqrt{\Delta}=8$ $racines$	$\begin{cases}u_0=-6\\u_{n+1}=-5u_n\end{cases}$ $terme\ général$
$f(x)=\dfrac{-2\sqrt{x}}{\frac{5}{x^3}-\frac{4}{x^9}}$ $f'(x)=$	$f(x)=\cos^4(-3x-9)$ $f'(x)=$

28×32	$\lim\limits_{x \to -\infty} \left(\dfrac{-4x^2 - 11x + 17}{13x^2 + 8x + 15} \right)$
$\cos(x - \pi)$	$F\begin{pmatrix} -4 \\ 19 \end{pmatrix} et\ C\begin{pmatrix} 24 \\ -9 \end{pmatrix}$ $\overrightarrow{FC}$
$z = -1 - \sqrt{3}\, i$ $\lvert z \rvert$; $\arg(z)$	$f(x) = -2x - \dfrac{2}{x^4} + 8x^9$ $F(x) =$
$P(x) = x^2 - x - 2$ $\sqrt{\Delta} = 3$ $racines$	$\begin{cases} u_0 = -10 \\ u_{n+1} = u_n + 6 \end{cases}$ $terme\ général$
$f(x) = \dfrac{9}{x^3} + 7\cos x - \dfrac{3}{x^3}$ $f'(x) =$	$f(x) = (8x^6 + x^8 + 7x^6)^9$ $f'(x) =$

$-\frac{1}{7}-\frac{4}{9}$		$\lim_{x\to-\infty}(-9x^6-8x^5-12x-6)$
$-\sin\left(\frac{\pi}{2}-x\right)$		$A\begin{pmatrix}0\\8\end{pmatrix}$ et $F\begin{pmatrix}-8\\-2\end{pmatrix}$ $\left\|\overrightarrow{FA}\right\|$
$(-3-5i)(-8i+7)$		$f(x)=9x^7-2x^{10}+7\sin x$ $F(x)=$
$P(x)=-x^2-5+8x$ $\Delta=$		$\begin{cases}u_0=-5\\u_{n+1}=2u_n\end{cases}$ $u_{16}=$
$f(x)=(4x^3-9x^7)\left(-6x-7\sqrt{x}\right)$ $f'(x)=$		$f(x)=(10x^6-4x^{10}+7x^5)^5$ $f'(x)=$

$\left(+\frac{12}{18}\right)\times\left(+\frac{15}{20}\right)$	$\lim\limits_{x\to+\infty}(-3x^3+5x^2-11x+7)$
$\cos\left(\frac{\pi}{2}+x\right)$	$\vec{u}(10\,;\,-8)\ et\ \vec{v}(-8\,;\,2)$ $\vec{u}\cdot\vec{v}$
$z=-3+4i$ $\lvert z\rvert=$	$f(x)=x+9x+2x^9$ $F(x)=$
$P(x)=3x^2+12-15x$ $\sqrt{\Delta}=9$ $racines$	$\begin{cases}u_0=10\\u_{n+1}=-8u_n\end{cases}$ $u_8=$
$f(x)=(-6x^2+2x)(-x-9x^{10})$ $f'(x)=$	$f(x)=\left(-5x^2-\frac{9}{x^{10}}+6\right)^9$ $f'(x)=$

25×15	$\lim\limits_{\substack{x \to 0 \\ x>0}} \left(\frac{1}{x^2}\right)$
$-\cos\left(\frac{\pi}{2} - x\right)$	$D\begin{pmatrix}-1\\-23\end{pmatrix} et\ A\begin{pmatrix}22\\-21\end{pmatrix}$ $\overrightarrow{AD}$
$(-6-1i)(-6+8i)$	$f(x) = 7x^3 + 7x^3 - \frac{7}{x^6}$ $F(x) =$
$P(x) = -3x^2 + 10x + 2$ $\Delta =$	$\begin{cases} u_0 = 5 \\ u_{n+1} = u_n - 2 \end{cases}$ $u_5 =$
$f(x) = \frac{\frac{10}{x^8} + \frac{6}{x}}{\frac{6}{x^8}}$ $f'(x) =$	$f(x) = \left(-10x^8 - \frac{2}{x^{10}} - \frac{1}{x^6}\right)^{10}$ $f'(x) =$

$\frac{9}{10} - \frac{6}{5}$	$\lim\limits_{x \to -\infty} \left(\frac{-14x^2 - 4x - 13}{-15x^2 - 19x + 7} \right)$
$\cos(x - \pi)$	$D(12\,;\,11) et\ F(20\,;\,18)$ $\overrightarrow{DF}$
$(9i + 7)(-8i + 7)$	$f(x) = 1 + \frac{10}{x^9} - 5x$ $F(x) =$
$P(x) = -4x^2 + 16$ $\sqrt{\Delta} = 16$ $racines$	$\begin{cases} u_0 = -4 \\ u_{n+1} = u_n + 5 \end{cases}$ $terme\ général$
$f(x) = (9x^5 + 9x^8)(-x^4 - 6x^2)$ $f'(x) =$	$f(x) = (-3x^5 + 7x^7 - 10x^9)^2$ $f'(x) =$

$\frac{9}{10}-\frac{2}{6}$	$\lim\limits_{\substack{x\to 17\\ x>17}} \left(\frac{-x-8}{-17+x}\right)$
$-\sin\left(x+\frac{\pi}{2}\right)$	$A\begin{pmatrix}-4\\-24\end{pmatrix} et\ D\begin{pmatrix}8\\-22\end{pmatrix}$ $\overrightarrow{AD}$
$P(x)=x^2+8-6x$ $\sqrt{\Delta}=2$ $racines$	$f(x)=-x^{10}-5x^7+5$ $F(x)=$
$P(x)=5x^2+3+4x$ $\Delta=$	$\begin{cases}u_0=9\\u_{n+1}=5u_n\end{cases}$ $u_{16}=$
$f(x)=\frac{\frac{2}{x^3}-4x^2}{7x^7}$ $f'(x)=$	$f(x)=\cos^8(10-9x)$ $f'(x)=$

$-\frac{3}{4}-\frac{10}{8}$	$\lim\limits_{x\to-\infty}\left(\frac{-17x^2-8x\ -12}{15x^2-10x\ +20}\right)$
$\sin\left(\frac{\pi}{2}-x\right)$	$H(17\ ;\ -23) et\ G(-2\ ;\ 19)$ $\overrightarrow{GH}$
$P(x)=-4x+2x^2\ -16$ $\sqrt{\Delta}=12$ $racines$	$f(x)=x^{10}-5x^3-2x^8$ $F(x)=$
$P(x)=-3-2x^2$ $\Delta=$	$\begin{cases}u_0=1\\u_{n+1}=9u_n\end{cases}$ $u_{16}=$
$f(x)=(10x-7x^9)(-8x+2x^3)$ $f'(x)=$	$f(x)=\cos^7(-7+8x)$ $f'(x)=$

$24^2 - 16^2$	$\lim\limits_{\substack{x \to 0 \\ x<0}} \left(-\frac{9}{x^4}\right)$
$-\cos\left(x - \frac{\pi}{2}\right)$	$D(-17\ ;\ -1) et\ E(-17\ ;\ 2)$ $\overrightarrow{DE}$
$\lvert z\rvert = 1\ ; \arg(z) = \frac{4\pi}{6}$ $z =$	$f(x) = -9x^2 - 9 - 5x^2$ $F(x) =$
$P(x) = -3x^2 + 6x + 9$ $\sqrt{\Delta} = 12$ $racines$	$\begin{cases} u_0 = -5 \\ u_{n+1} = 5u_n \end{cases}$ $u_5 =$
$f(x) = 10\cos x + 6x + 7x$ $f'(x) =$	$f(x) = \left(9x^9 - \frac{5}{x^3} - \frac{10}{x^6}\right)^8$ $f'(x) =$

33×27	$\lim\limits_{x \to -1} \left(-\frac{7}{x^6}\right)$
$-\sin\left(\frac{\pi}{2} + x\right)$	$\vec{u}(-6\,;\,-2)\ et\ \vec{v}(8\,;\,1)$ $\vec{u} \cdot \vec{v}$
$\lvert z \rvert = 3\,;\arg(z) = \frac{\pi}{2}$ $z =$	$f(x) = 7 + x^4 + 8x^5$ $F(x) =$
$P(x) = 4x^2\ - 4 - 5x$ $\Delta =$	$\begin{cases} u_0 = -5 \\ u_{n+1} = -1u_n \end{cases}$ $u_8 =$
$f(x) = \dfrac{-2x^5 + \frac{1}{x^7}}{\frac{1}{x^4}}$ $f'(x) =$	$f(x) = \left(9x - \frac{5}{x}\right)^7$ $f'(x) =$

$\frac{9}{7}+\frac{3}{10}$		$\lim\limits_{x\to+\infty}(-9x^6-11x^3+2x-4)$
$-\cos(-x)$		$F(-4\,;\,-4) et\ E(1\,;\,0)$ $\left\|\left\|\overrightarrow{FE}\right\|\right\|$
$z=7\cos\frac{\pi}{2}+7i\sin\frac{\pi}{2}$ $z=$		$f(x)=3x-7+x^3$ $F(x)=$
$P(x)=-2x^2-5-7x$ $\Delta=$		$\begin{cases}u_0=10\\u_{n+1}=-5u_n\end{cases}$ $u_3=$
$f(x)=(-6x-7x^5)\left(5\sqrt{x}+x^6\right)$ $f'(x)=$		$f(x)=(8x^7-7x^4-x^7)^6$ $f'(x)=$

$\frac{5}{5}+\frac{4}{4}$		$\lim\limits_{x\to+\infty}\left(\frac{-10x^2-11x\ -15}{15x^2-x\ -16}\right)$
$-\cos\left(\frac{\pi}{2}+x\right)$		$A(-6\ ;\ 7) et\ B(2\ ;\ -10)$ $\left\|\left\|\overrightarrow{AB}\right\|\right\|$
$(5i+2)(1-8i)$		$f(x)=-\frac{2}{x^2}-\frac{7}{x^8}-\frac{5}{x^{10}}$ $F(x)=$
$P(x)=5x^2\ -60+5x$ $\sqrt{\Delta}=35$ $racines$		$\begin{cases}u_0=9\\u_{n+1}=4u_n\end{cases}$ $terme\ général$
$f(x)=5x^7-7\cos x+7x^7$ $f'(x)=$		$f(x)=\left(-7x^6+\frac{7}{x^7}-2x^7\right)^7$ $f'(x)=$

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

$16^2 - 24^2$	$\lim_{x \to -\infty} \left(\frac{8}{x^8}\right)$
$-\sin(x + \pi)$	$B\begin{pmatrix} 4 \\ -10 \end{pmatrix} et\ A\begin{pmatrix} -1 \\ 8 \end{pmatrix}$ $\left\|\overrightarrow{AB}\right\|$
$P(x) = -4 + x^2$ $\sqrt{\Delta} = 4$ $racines$	$f(x) = 1 - 6x^{10} + 9x^4$ $F(x) =$
$P(x) = -5x^2 + 4$ $\Delta =$	$\begin{cases} u_0 = 7 \\ u_{n+1} = u_n + 5 \end{cases}$ $u_{15} =$
$f(x) = -9x^8 - 6x - \frac{2}{x^{10}}$ $f'(x) =$	$f(x) = (-9x^6 - 3x^8)^5$ $f'(x) =$

5×15	$\lim\limits_{\substack{x \to -3 \\ x > -3}} \left(\dfrac{x+10}{-3-x}\right)$
$-\cos(-x)$	$D(19\ ;\ 17) et\ E(11\ ;\ 7)$ $\overrightarrow{DE}$
$P(x) = -x^2 - 6x - 5$ $\sqrt{\Delta} = 4$ $racines$	$f(x) = -7\sin x + x^6 + 2x^{10}$ $F(x) =$
$P(x) = -2x^2 + 5 + 9x$ $\Delta =$	$\begin{cases} u_0 = -1 \\ u_{n+1} = 5u_n \end{cases}$ $terme\ général$
$f(x) = \left(\sqrt{x} - 4x\right)(-x^3 - 5x^2)$ $f'(x) =$	$f(x) = (5x^9 - 5x^{10} + 8x^8)^6$ $f'(x) =$

$\frac{3}{6}-\frac{3}{10}$	$\lim\limits_{x\to-\infty}\left(-\frac{6}{5x^{10}}\right)$
$\sin\left(\frac{\pi}{2}-x\right)$	$B(-19\,;\,17) et\ G(-7\,;\,25)$ $\overrightarrow{GB}$
$z=\sqrt{2}-\sqrt{2}\,i$ $\lvert z\rvert\,;\arg(z)$	$f(x)=7x^4+5x^6-5x^7$ $F(x)=$
$P(x)=-15+x^2\ +2x$ $\sqrt{\Delta}=8$ $racines$	$\begin{cases}u_0=-1\\u_{n+1}=u_n+9\end{cases}$ $u_{20}=$
$f(x)=x^2+\frac{2}{x^6}+\frac{4}{x^5}$ $f'(x)=$	$f(x)=\left(-8x^4+4x^9-\frac{9}{x^3}\right)^6$ $f'(x)=$

$21^2 - 19^2$	$\lim\limits_{\substack{x \to -5 \\ x<-5}} \left(\dfrac{-17+x}{-5-x}\right)$
$-\sin(x-\pi)$	$F(0\ ;\ 0) et\ B(7\ ;\ 5)$ $\left\|\left\|\overrightarrow{FB}\right\|\right\|$
$(-6i-4)(1-7i)$	$f(x) = 3\sin x - 4\cos x - 5\sin x$ $F(x) =$
$P(x) = x^2 + 7x + 5$ $\Delta =$	$\begin{cases} u_0 = -6 \\ u_{n+1} = -6u_n \end{cases}$ *terme général*
$f(x) = (x^4 - 6x^6)(x^6 + 2x)$ $f'(x) =$	$f(x) = \cos^6(9x+1)$ $f'(x) =$

$-\frac{8}{10}-\frac{2}{8}$	$\lim\limits_{\substack{x\to -16\\ x>-16}} \left(\frac{-x+2}{-16-x}\right)$
$-\cos\left(x-\frac{\pi}{2}\right)$	$\vec{u}(-5\,;\,-9)\ et\ \vec{v}(1\,;\,-6)$ $\vec{u}\cdot\vec{v}$
$(-8i-3)(9-4i)$	$f(x)=9x^{10}+2x^{7}-8x^{2}$ $F(x)=$
$P(x)=-2x^{2}+2x$ $\sqrt{\Delta}=2$ $racines$	$\begin{cases}u_0=-5\\ u_{n+1}=u_n-5\end{cases}$ $terme\ général$
$f(x)=8x^{7}-4x+\frac{4}{x^{10}}$ $f'(x)=$	$f(x)=(4x^{5}+9x^{2}-4x^{6})^{2}$ $f'(x)=$

$\frac{5}{6}+\frac{5}{8}$	$\lim\limits_{x\to+1}\left(\frac{-17x^2+15x\ -1}{19x^2-8}\right)$
$-\cos\left(x-\frac{\pi}{2}\right)$	$\vec{u}(-7\ ;\ 3)\ et\ \vec{v}(4\ ;\ 10)$ $\vec{u}\cdot\vec{v}$
$\lvert z\rvert=4\ ;\arg(z)=\frac{\pi}{3}$ $z=$	$f(x)=-\frac{5}{x^8}+7x^7-\frac{1}{x^4}$ $F(x)=$
$P(x)=5x^2\ -10x$ $\sqrt{\Delta}=10$ $racines$	$\begin{cases}u_0=5\\u_{n+1}=u_n-10\end{cases}$ $u_3=$
$f(x)=(-9x^6+10x^8)(10x+x)$ $f'(x)=$	$f(x)=\sin(x+1)$ $f'(x)=$

$\frac{1}{7}+\frac{9}{7}$	$\lim\limits_{x\to-\infty}\left(-\frac{10}{x^5}\right)$
$-\cos\left(x-\frac{\pi}{2}\right)$	$\vec{u}\begin{pmatrix}-4\\-8\end{pmatrix}$ *et* $\vec{v}\begin{pmatrix}6\\8\end{pmatrix}$ $\vec{u}\cdot\vec{v}$
$P(x)=-4x^2-24x-20$ $\sqrt{\Delta}=16$ *racines*	$f(x)=9x+4\cos x-10\sin x$ $F(x)=$
$P(x)=-2x^2-1+8x$ $\Delta=$	$\begin{cases}u_0=-9\\u_{n+1}=8u_n\end{cases}$ *terme général*
$f(x)=\frac{\frac{8}{x^5}+\frac{6}{x^2}}{-2x^3}$ $f'(x)=$	$f(x)=\sin(-3x-6)$ $f'(x)=$

$-\frac{7}{8}-\frac{2}{6}$	$\lim\limits_{x\to-\infty}\left(\frac{-4x^2-9x\ -14}{-9x^2-12x\ +6}\right)$
$-\cos\left(x+\frac{\pi}{2}\right)$	$F\begin{pmatrix}9\\9\end{pmatrix}$ et $C\begin{pmatrix}2\\-3\end{pmatrix}$ $\left\|\overrightarrow{FC}\right\|$
$(9i+4)(9i-4)$	$f(x)=-5x^8-2x^2+9x^4$ $F(x)=$
$P(x)=-4x^2\ -2-2x$ $\Delta=$	$\begin{cases}u_0=6\\u_{n+1}=u_n+10\end{cases}$ $u_2=$
$f(x)=(-x^6-x^3)(-7x-8x^{10})$ $f'(x)=$	$f(x)=(-5x^4-7x-4x^5)^9$ $f'(x)=$

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

$-\frac{10}{7}+\frac{5}{7}$	$\lim_{x\to+\infty}\left(-\frac{3}{11x^4}\right)$
$-\cos\left(x+\frac{\pi}{2}\right)$	$\vec{u}(-6\,;\,-10)\ et\ \vec{v}(6\,;\,0)$ $\vec{u}\cdot\vec{v}$
$z=8-6i$ $\lvert z\rvert=$	$\frac{f(x)=-3\sin x1}{x^{10}}+\frac{7}{x^5}$ $F(x)=$
$P(x)=-2x^2\ -16-12x$ $\sqrt{\Delta}=4$ $racines$	$\begin{cases}u_0=-3\\u_{n+1}=-2u_n\end{cases}$ $terme\ général$
$f(x)=\frac{\sqrt{x}}{-7\sqrt{x}-7x}$ $f'(x)=$	$f(x)=(-10x^7-6x^7-6x^2)^7$ $f'(x)=$

$17^2 - 23^2$	$\lim\limits_{x \to +\infty} \left(\dfrac{-10x^2 + 15x - 19}{17x^2 - 11x - 13} \right)$
$-\sin(x + \pi)$	$\vec{u}(-5\,;\,-2)$ *et* $\vec{v}(4\,;\,-1)$ $\vec{u} \cdot \vec{v}$
$P(x) = 2x - 24 + 2x^2$ $\sqrt{\Delta} = 14$ *racines*	$f(x) = \dfrac{5}{x^5} - \dfrac{10}{x^3} + 10x^2$ $F(x) =$
$P(x) = 3x^2 - 4 + 10x$ $\Delta =$	$\begin{cases} u_0 = -8 \\ u_{n+1} = u_n + 8 \end{cases}$ *terme général*
$f(x) = \dfrac{\dfrac{-2}{x^8}}{-2x + x^4}$ $f'(x) =$	$f(x) = \left(5x^{10} - 6x^9 + \dfrac{9}{x^6} \right)^2$ $f'(x) =$

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

$-\frac{2}{6}-\frac{9}{6}$	$\lim\limits_{\substack{x\to -13\\ x<-13}} \left(\frac{x+1}{13+x}\right)$
$-\cos(x-\pi)$	$C\begin{pmatrix}-6\\-6\end{pmatrix} et\ H\begin{pmatrix}25\\23\end{pmatrix}$ $\overrightarrow{CH}$
$z=-4+9i$ $\lvert z\rvert =$	$f(x)=4x^7-8x^6+5x^5$ $F(x)=$
$P(x)=x^2-8x+2$ $\Delta =$	$\begin{cases}u_0=1\\u_{n+1}=-2u_n\end{cases}$ *terme général*
$f(x)=(-5x+3x^2)(8x^7+4x^6)$ $f'(x)=$	$f(x)=\left(-\frac{5}{x^6}+\frac{1}{x^{10}}-6x^9\right)^5$ $f'(x)=$

$12^2 - 8^2$	$\lim\limits_{x \to -1} \left(\frac{10}{2x^4}\right)$
$-\cos\left(\frac{\pi}{2} + x\right)$	$D(8\,;\,-19) et\ G(-16\,;\,-2)$ $\overrightarrow{DG}$
$(10i + 8)(-8i - 10)$	$f(x) = 3\sin x + 5x^7 - 9\sin x$ $F(x) =$
$P(x) = 4 - 3x^2 + 8x$ $\Delta =$	$\begin{cases} u_0 = -3 \\ u_{n+1} = -10u_n \end{cases}$ *terme général*
$f(x) = \left(10\sqrt{x} - 10x^8\right)\left(-5\sqrt{x} - 8x^4\right)$ $f'(x) =$	$f(x) = (-4 + x^{10})^3$ $f'(x) =$

19^2	$\lim\limits_{x\to-\infty}\left(\dfrac{19x^2-15x+7}{19x^2+9x-17}\right)$
$\cos\left(\dfrac{\pi}{2}+x\right)$	$G\begin{pmatrix}-7\\1\end{pmatrix}$ et $A\begin{pmatrix}2\\10\end{pmatrix}$ $\left\|\overrightarrow{GA}\right\|$
$z=8\cos\left(-\dfrac{2\pi}{3}\right)+8i\sin\left(-\dfrac{2\pi}{3}\right)$ $z=$	$f(x)=-2\cos x-\dfrac{1}{x^{10}}+\dfrac{4}{x^8}$ $F(x)=$
$P(x)=-4x+x^2-5$ $\Delta=$	$\begin{cases}u_0=-5\\u_{n+1}=-5u_n\end{cases}$ *terme général*
$f(x)=\dfrac{-8}{x^5}+2x^{10}-\dfrac{7}{x^4}$ $f'(x)=$	$f(x)=\left(5x^{10}-9x^7+\dfrac{3}{x^6}\right)^9$ $f'(x)=$

$\left(-\frac{30}{20}\right)\times\left(-\frac{15}{36}\right)$	$\lim\limits_{x\to+1}\left(\frac{6}{x^5}\right)$
$-\cos\left(x-\frac{\pi}{2}\right)$	$E(7\,;\,24) et\ G(16\,;\,25)$ $\overrightarrow{EG}$
$(7+2i)(7-2i)$	$f(x)=7x^{10}-4x^5-7x^6$ $F(x)=$
$P(x)=-3x^2\ +2-x$ $\Delta=$	$\begin{cases}u_0=2\\u_{n+1}=-8u_n\end{cases}$ *terme général*
$f(x)=(3x^8-x^7)(8x^5-5x^{10})$ $f'(x)=$	$f(x)=\cos^{10}(4x+2)$ $f'(x)=$

$-\frac{9}{5}-\frac{8}{3}$		$\lim\limits_{x\to-\infty}(-3x^9+10x^7+10x^6)$
$\cos(x-\pi)$		$C\begin{pmatrix}3\\9\end{pmatrix}et\ G\begin{pmatrix}-3\\0\end{pmatrix}$ $\|\overrightarrow{GC}\|$
$P(x)=10-2x^2-8x$ $\sqrt{\Delta}=12$ $racines$		$f(x)=9x^3-1+2$ $F(x)=$
$P(x)=3x-3x^2-2$ $\Delta=$		$\begin{cases}u_0=-2\\u_{n+1}=-7u_n\end{cases}$ $terme\ général$
$f(x)=\left(10x+6\sqrt{x}\right)(-6x^8+7x^5)$ $f'(x)=$		$f(x)=\sin^{10}(8x+3)$ $f'(x)=$

$-\frac{7}{10}-\frac{7}{1}$		$\lim_{x\to-\infty}\left(\frac{4}{8x^9}\right)$
$\sin(-x)$		$D(-3\ ;\ -8) et\ A(-5\ ;\ 10)$ $\left\|\left\|\overrightarrow{AD}\right\|\right\|$
$(-7i-4)(5-7i)$		$f(x)=10x^5-10x^3+6$ $F(x)=$
$P(x)=2x^2\ -20-6x$ $\sqrt{\Delta}=14$ $racines$		$\begin{cases}u_0=4\\u_{n+1}=6u_n\end{cases}$ $u_{17}=$
$f(x)=\frac{-4\sqrt{x}}{-8x^{10}+2x}$ $f'(x)=$		$f(x)=(-4x^7-4x^5-8x^3)^6$ $f'(x)=$

$25^2 - 15^2$		$\lim\limits_{x \to -1} \left(\frac{6}{x^{10}}\right)$
$-\cos(\pi - x)$		$A(-17\ ;\ 9) et\ G(22\ ;\ 12)$ $\overrightarrow{AG}$
$z = -1 - \sqrt{3}\, i$ $\lvert z \rvert\ ; \arg(z)$		$f(x) = 10x^3 + x^4 + 2x$ $F(x) =$
$P(x) = x^2 + 2x + 1$ $\sqrt{\Delta} = 0$ $racines$		$\begin{cases} u_0 = -1 \\ u_{n+1} = u_n + 8 \end{cases}$ $u_{17} =$
$f(x) = \dfrac{\dfrac{-4}{x^3}}{-10x + 4\sqrt{x}}$ $f'(x) =$		$f(x) = \left(\frac{9}{x^{10}} - 3x^8 - \frac{8}{x^7}\right)^3$ $f'(x) =$

18×22		$\lim\limits_{x \to -\infty} \left(\dfrac{15x^2 + 9x - 19}{-3x^2 - 15x + 1} \right)$
$-\sin(x + \pi)$		$G(-13\,;\,6) et\ D(0\,;\,17)$ $\overrightarrow{GD}$
$(6i + 12)(6i - 12)$		$f(x) = \dfrac{9}{x^3} + 4\cos x + 9x^6$ $F(x) =$
$P(x) = x^2$ $\Delta =$		$\begin{cases} u_0 = -10 \\ u_{n+1} = u_n - 5 \end{cases}$ $terme\ général$
$f(x) = \dfrac{3}{x^8} + \dfrac{7}{x^9} + x$ $f'(x) =$		$f(x) = (-x^8 + 7x^2 + 2x^9)^6$ $f'(x) =$

17^2	$\lim\limits_{\substack{x\to 0\\ x<0}} \left(\frac{9}{11x^2}\right)$
$-\cos\left(\frac{\pi}{2}-x\right)$	$B\begin{pmatrix}-16\\16\end{pmatrix} et\ C\begin{pmatrix}-4\\-11\end{pmatrix}$ $\overrightarrow{BC}$
$z=-\sqrt{2}-\sqrt{2}\,i$ $\lvert z\rvert\ ;\arg(z)$	$f(x)=-\frac{3}{x^3}-3\sin x+5x$ $F(x)=$
$P(x)=4x^2+5x-5$ $\Delta=$	$\begin{cases}u_0=-8\\u_{n+1}=u_n-5\end{cases}$ *terme général*
$f(x)=\dfrac{\frac{-2}{x^9}+\frac{10}{x^{10}}}{-10\sqrt{x}}$ $f'(x)=$	$f(x)=(-3x^{10}+7x^2-10x^5)^8$ $f'(x)=$

$33^2 - 27^2$	$\lim\limits_{x \to -\infty} (8x^8 - 11x^7 + 12x^3 + 12x)$
$-\cos(\pi + x)$	$D(-20\,;\,-15) et\ B(-22\,;\,17)$ $\overrightarrow{BD}$
$(8 + 5i)(8 - 5i)$	$f(x) = 3x^2 - \frac{3}{x^8} - \frac{3}{x^{10}}$ $F(x) =$
$P(x) = x^2 - 16$ $\sqrt{\Delta} = 8$ $racines$	$\begin{cases} u_0 = -9 \\ u_{n+1} = u_n + 9 \end{cases}$ $terme\ général$
$f(x) = \frac{-6}{x^7} - \frac{5}{x^{10}} + \frac{3}{x^{10}}$ $f'(x) =$	$f(x) = (-9x^7 - 10x^3 - 10x^8)^9$ $f'(x) =$

$5^2 - 15^2$	$\lim\limits_{x \to +\infty} (6x^4 - 6x^2 + 7x - 5)$
$-\cos(x - \pi)$	$\vec{u}\begin{pmatrix}3\\8\end{pmatrix}$ et $\vec{v}\begin{pmatrix}10\\6\end{pmatrix}$ $\vec{u} \cdot \vec{v}$
$z = -\sqrt{2}\, i - \sqrt{2}$ $\lvert z \rvert$; $\arg(z)$	$f(x) = -\dfrac{61}{x^7}$ $F(x) =$
$P(x) = 8x + 2x^2$ $\sqrt{\Delta} = 8$ $racines$	$\begin{cases} u_0 = 0 \\ u_{n+1} = u_n + 10 \end{cases}$ $u_{16} =$
$f(x) = (7x^8 + 10x^8)(5x^4 + 10x^9)$ $f'(x) =$	$f(x) = (-4x^{10} + 8x^3 + x^3)^4$ $f'(x) =$

$-\frac{5}{6}-\frac{2}{4}$	$\lim\limits_{x\to-\infty}\left(\frac{15x\ +11}{17x^2-4x\ -17}\right)$
$-\sin\left(x+\frac{\pi}{2}\right)$	$B\begin{pmatrix}10\\-9\end{pmatrix}et\ C\begin{pmatrix}-4\\16\end{pmatrix}$ $\overrightarrow{BC}$
$z=10+i$ $\lvert z\rvert=$	$f(x)=x^6-2x^8-10\cos x$ $F(x)=$
$P(x)=x^2\ +3-x$ $\Delta=$	$\begin{cases}u_0=-2\\u_{n+1}=u_n+4\end{cases}$ $u_{17}=$
$f(x)=\frac{-7x+\frac{9}{x^3}}{-4x^3}$ $f'(x)=$	$f(x)=(x^8-3x^{10}-7x^2)^9$ $f'(x)=$