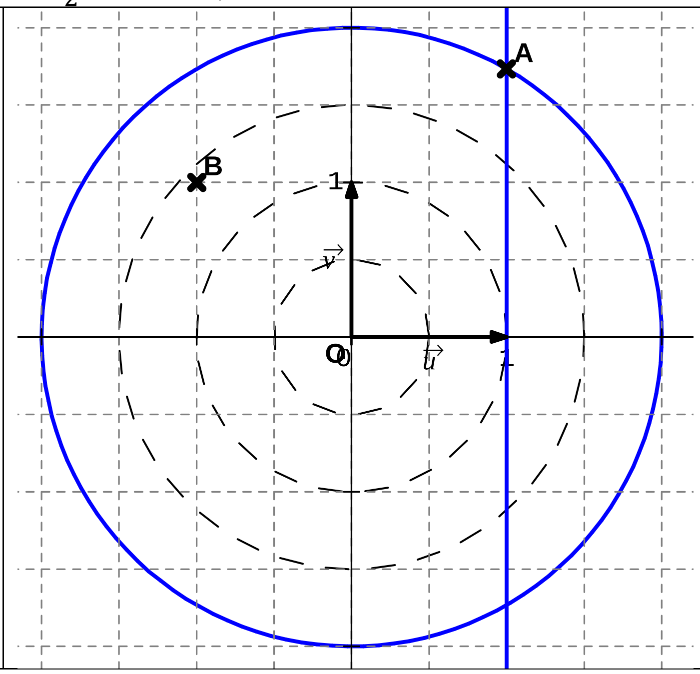
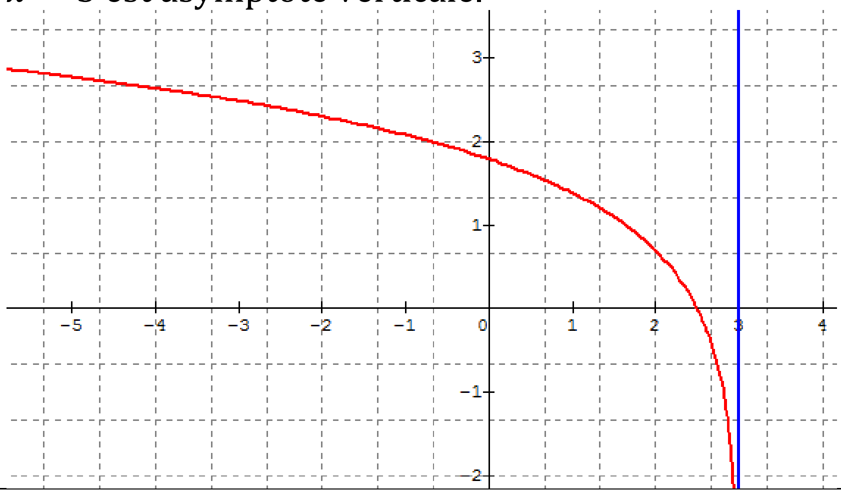
Exercice 1.	1.	$z_1 = (3+2i)(5-2i)$ $= 15 - 6i + 10i - 4i^2$ $= 15 + 4i + 4$ $\mathbf{z_1 = 19 + 4i}$	1
		$z_2 = \dfrac{2i+1}{i-2}$ $= \dfrac{(2i+1)\times(i+2)}{(i-2)\times(i+2)}$ $= \dfrac{2i^2+4i+i+2}{i^2-4}$ $= \dfrac{-2+5i+2}{-1-4}$ $= \dfrac{5i}{-5}$ $\mathbf{z_2 = -i}$	2
	2.	$z^2 = -2 \Leftrightarrow \underbrace{z^2+2}_{a=1,\ b=0,\ c=2} = 0$ $\Delta = 0 - 4\times 2 = -8 < 0$ $z_1 = \dfrac{0 - i\sqrt{8}}{2} = \dfrac{-i\sqrt{4\times 2}}{2} = \dfrac{-2i\sqrt{2}}{2} = -i\sqrt{2}$ et $z_2 = i\sqrt{2}$	1
		$\underbrace{z^2 - 6z + 12}_{a=1,\ b=-6,\ c=12} = 0$ $\Delta = 36 - 4\times 12 = -12 < 0$ $z_1 = \dfrac{6 - i\sqrt{12}}{2} = \dfrac{6 - i\sqrt{4\times 3}}{2} = \dfrac{6 - 2i\sqrt{3}}{2} = \dfrac{6}{2} - \dfrac{2i\sqrt{3}}{2} = 3 - i\sqrt{3}$ et $z_2 = 3 + i\sqrt{3}$	1
	3.	$z_A = 1 + i\sqrt{3}$ $\lvert z_A\rvert = \lvert 1 + i\sqrt{3}\rvert = \sqrt{1+3}$ $= \sqrt{4} = 2$ $\left.\begin{array}{l}\cos\theta = \dfrac{1}{2} \\ \sin\theta = \dfrac{\sqrt{3}}{2}\end{array}\right\}$ donc $\theta = \dfrac{\pi}{3}\ [2\pi]$ Le module vaut 2 et un argument est $\frac{\pi}{3}$.  	2,5

		$z_B = -1 + i$ $\lvert z_B \rvert = \lvert -1 + i \rvert = \sqrt{1+1} = \sqrt{2}$ $\left.\begin{array}{l} \cos\theta = \frac{-1}{\sqrt{2}} = \frac{-1\times\sqrt{2}}{\sqrt{2}\times\sqrt{2}} = \frac{-\sqrt{2}}{2} \\ \sin\theta = \frac{1}{\sqrt{2}} = \frac{1\times\sqrt{2}}{\sqrt{2}\times\sqrt{2}} = \frac{\sqrt{2}}{2} \end{array}\right\}$ donc $\theta = \frac{3\pi}{4}\ [2\pi]$ Le module vaut $\sqrt{2}$ et un argument est $\frac{3\pi}{4}$.	2,5
Exercice 2.	**1.**	$f(x) = \ln(6-2x)$ définie sur $]-\infty; 3[$ $\lim\limits_{x\to-\infty} (6-2x) = +\infty$ donc $\lim\limits_{x\to-\infty} \ln(6-2x) = +\infty$ $\lim\limits_{x\to3^-} (6-2x) = 0^+$ donc $\lim\limits_{x\to3^-} \ln(6-2x) = -\infty$ $x = 3$ est asymptote verticale. 	2
	2.	$g(x) = \frac{3}{x-2}$ définie sur $]2, +\infty[$ $\lim\limits_{x\to2^+} (x-2) = 0^+$ donc $\lim\limits_{x\to2^+} \frac{3}{x-2} = +\infty$ $x = 2$ est asymptote verticale. $\lim\limits_{x\to+\infty} (x-2) = +\infty$ donc $\lim\limits_{x\to+\infty} \frac{3}{x-2} = 0$ $y = 0$ est asymptote horizontale.	3

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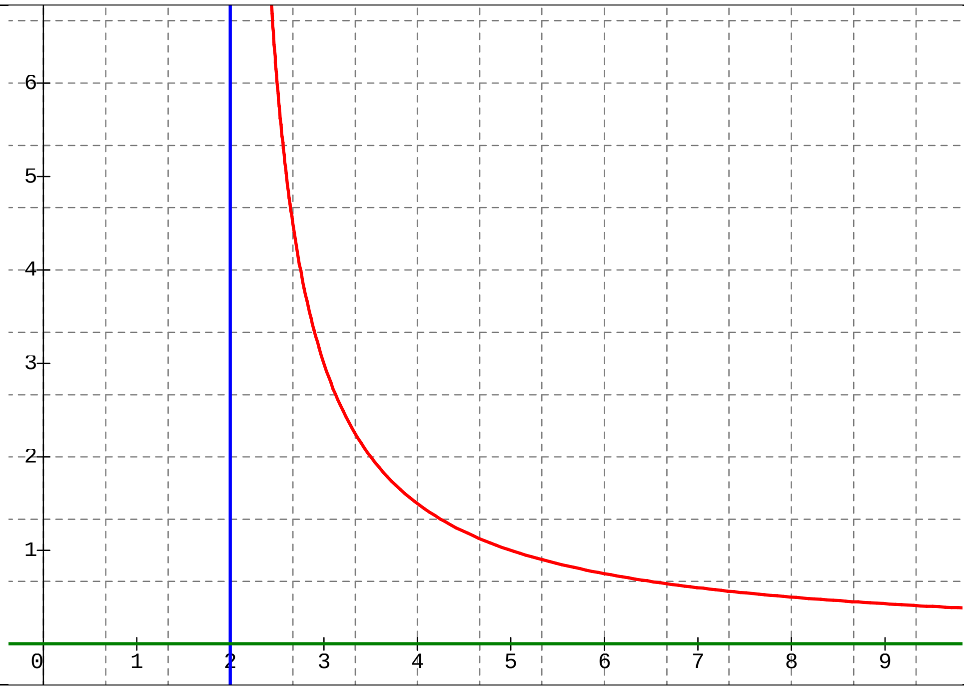
<tr><td></td><td></td><td>
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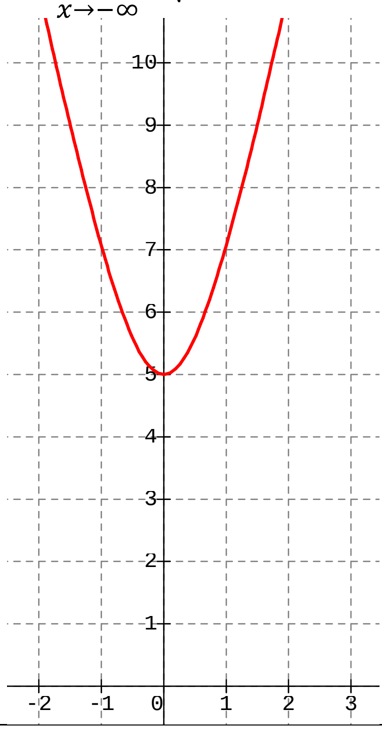
<tr><td></td><td>3.</td><td>$h(x) = 5\sqrt{x^2+1}$ définie sur $\mathbb{R}$

$\lim\limits_{x \to +\infty} x^2 + 1 = +\infty$ donc $\lim\limits_{x \to +\infty} 5\sqrt{x^2+1} = +\infty$

$\lim\limits_{x \to -\infty} x^2 + 1 = +\infty$ donc $\lim\limits_{x \to -\infty} 5\sqrt{x^2+1} = +\infty$

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$k(x)=\dfrac{1-4x}{3-x}$ définie sur $]3,+\infty[$

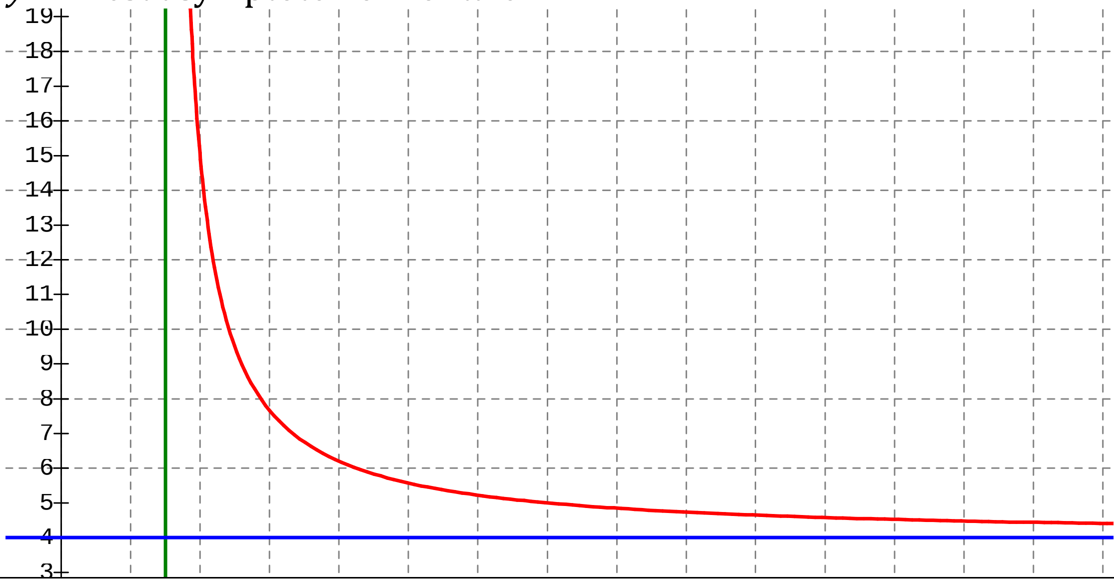
$\left.\begin{array}{l}\lim\limits_{x\to 3^+}(1-4x)=-11\\ \lim\limits_{x\to 3^+}(3-x)=0^-\end{array}\right\}$ donc $\lim\limits_{x\to 3^+}\dfrac{1-4x}{3-x}=+\infty$

$x=3$ est asymptote verticale.

$\left.\begin{array}{l}\lim\limits_{x\to +\infty}(1-4x)=-\infty\\ \lim\limits_{x\to +\infty}(3-x)=-\infty\end{array}\right\}$ donc Fi par quotient

or $\lim\limits_{x\to +\infty}\dfrac{1-4x}{3-x}=\lim\limits_{x\to +\infty}\dfrac{-4x}{-x}=\lim\limits_{x\to +\infty}\dfrac{-4}{-1}=4$

$y=4$ est asymptote horizontale.



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