

1.29

$$1) \quad x^4 + 2x^3 - 5x^2 - 6x = x \overbrace{(x^3 + 2x^2 - 5x - 6)}^{P(x)}$$

↓
diviseurs

candidates : $\pm 1, \pm 2, \pm 3, \pm 6$

$$P(1) = 1^3 + 2 \cdot 1^2 - 5 \cdot 1 - 6 \neq 0$$

$$P(-1) = (-1)^3 + 2(-1)^2 - 5 \cdot (-1) - 6 = -1 + 2 + 5 - 6 = 0 \checkmark$$

↓ -1 est un zéro $\Leftrightarrow P(x) = (x+1)(\quad)$

	1	2	-5	-6
-1		-1	-1	6
	1	1	-6	0

$$\Rightarrow x^4 + 2x^3 - 5x^2 - 6x = x(x+1)(x^2+x-6)$$
$$= \underline{x(x+1)(x+3)(x-2)}$$

1.29

$$3) 6x^4 - 5x^3 - 23x^2 + 20x - 4$$

$$= (x-2)(6x^3 + 7x^2 - 9x + 2)$$

$$= (x-2)(x+2)(6x^2 - 5x + 1)$$

$$= (x-2)(x+2) \cdot 6 \left(x - \frac{1}{2}\right) \left(x - \frac{1}{3}\right)$$
$$= (x-2)(x+2)(2x-1)(3x-1)$$

candidats : $\pm 1, \pm 2$ et ± 4

$$P(1) = 6 - 5 - 23 + 20 - 4 \neq 0$$

$$P(-1) = 6 + 5 - 23 - 20 - 4 \neq 0$$

$$P(2) = 96 - 40 - 92 + 40 - 4 = 0 \quad \checkmark$$

Homer

	6	-5	-23	20	-4
2		12	14	-18	
	6	7	-9	2	0

$$P(-2) = 96 + 40 - 92 - 40 - 4 = 0 \quad \checkmark$$

Homer

	6	7	-9	2
-2		-12	10	-2
	6	-5	1	0

$$\Delta = 25 - 4 \cdot 6 \cdot 1 = 1$$

$$x_{1,2} = \frac{5 \pm 1}{12} = \begin{cases} \frac{1}{2} \\ \frac{1}{3} \end{cases}$$