EXERCICE 1D.1

Factoriser le polynôme, comme dans l'exemple :

$A(x)=(x+3)^2-2$ $=(x+3)^2-(\sqrt{2})^2$ $=(x+3+\sqrt{2})(x+3-\sqrt{2})$		$B(x)=(x-5)^2-3$
$C(x)=(x+5)^2-7$	$D(x)=(x-3)^2-16$	$E(x)=(x-7)^2-2$
$F(x)=(2x-3)^2-11$	$G(x)=(3x+5)^2-25$	$H(x)=(5x-1)^2-4$

EXERCICE 1D.2

Ecrire sous forme canonique puis factoriser le polynôme (Culture générale)

$A(x) = x^2 + 6x + 5$ **$= x^2 + \underline{2 \times 3 \times x} + 5$** **$= (x^2 + 2 \times 3 \times x + \underline{3^2}) - \underline{3^2} + 5$** **$= (x + 3)^2 - \underline{9} + 5$** **$= (x + 3)^2 - 4$** **$= (x + 3)^2 - 2^2$** **$= (x + 3 + 2)(x + 3 - 2)$** **$= (x + 5)(x + 1)$**		$B(x)=x^2-12x+35$
$C(x)=x^2-2x-3$	$D(x)=x^2+6x+8$	$E(x)=x^2-6x-7$
$F(x)=x^2-14x+47$	$G(x)=x^2+x-6$	$H(x)=25x^2-10x-3$

CORRIGE – NOTRE DAME DE LA MERCI - *MONTPELLIER*

EXERCICE 1D.1 Factoriser le polynôme, comme dans l'exemple :

$A(x)=(x+3)^2-2$ $=(x+3)^2-(\sqrt{2})^2$ $=(x+3+\sqrt{2})(x+3-\sqrt{2})$		$B(x)=(x-5)^2-3$ $B(x)=(x-5)^2-(\sqrt{3})^2$ $B(x)=(x-5+\sqrt{3})(x-5-\sqrt{3})$
$C(x)=(x+5)^2-7$ $C(x)=(x+5)^2-(\sqrt{7})^2$ $C(x)=(x+5+\sqrt{7})(x+5-\sqrt{7})$	$D(x)=(x-3)^2-16$ $D(x)=(x-3)^2-4^2$ $D(x)=(x-3+4)(x-3-4)$ $D(x)=(x+1)(x-7)$	$E(x)=(x-7)^2-2$ $E(x)=(x-7)^2-(\sqrt{2})^2$ $E(x)=(x-7+\sqrt{2})(x-7-\sqrt{2})$
$F(x)=(2x-3)^2-11$ $F(x)=(2x-3)^2-(\sqrt{11})^2$ $F(x)=(2x-3+\sqrt{11})(2x-3-\sqrt{11})$	$G(x)=(3x+5)^2-25$ $G(x)=(3x+5)^2-5^2$ $G(x)=(3x+5+5)(3x+5-5)$ $G(x)=3x(3x+10)$	$H(x)=(5x-1)^2-4$ $H(x)=(5x-1)^2-2^2$ $H(x)=(5x-1+2)(5x-1-2)$ $H(x)=(5x+1)(5x-3)$

EXERCICE 1D.2 Ecrire sous forme canonique puis factoriser le polynôme (Culture générale)

$A(x) = x^2 + 6x + 5$ **$= x^2 + \underline{2 \times 3 \times x} + 5$** **$= (x^2 + 2 \times 3 \times x + \underline{3^2}) - \underline{3^2} + 5$** **$= (x + 3)^2 - \underline{9} + 5$** **$= (x + 3)^2 - 4$** **$= (x + 3)^2 - 2^2$** **$= (x + 3 + 2)(x + 3 - 2)$** **$= (x + 5)(x + 1)$**	$B(x)=x^2-12x+35$ $B(x)=x^2-2\times x\times 6+35$ $B(x)=(x^2-2\times x\times 6+6^2)-6^2+35$ $B(x)=(x-6)^2-36+35$ $B(x)=(x-6)^2-1$ $B(x)=(x-6)^2-1^2$ $B(x)=(x-6+1)(x-6-1)$ $B(x)=(x-5)(x-7)$
$C(x)=x^2-2x-3$ $C(x)=x^2-2\times x\times 1-3$ $C(x)=(x^2-2\times x\times 1+1^2)-1^2-3$ $C(x)=(x-1)^2-1-3$ $C(x)=(x-1)^2-4$ $C(x)=(x-1)^2-2^2$ $C(x)=(x-1+2)(x-1-2)$ $C(x)=(x+1)(x-3)$	$D(x)=x^2+6x+8$ $D(x)=x^2+2\times x\times 3+8$ $D(x)=(x^2+2\times x\times 3+3^2)-3^2+8$ $D(x)=(x+3)^2-9+8$ $D(x)=(x+3)^2-1$ $D(x)=(x+3)^2-1^2$ $D(x)=(x+3+1)(x+3-1)$ $D(x)=(x+4)(x+2)$

$$E(x)=x^2-6x-7$$
$$E(x)=x^2-\mathbf{2\times x\times 3}-7$$
$$E(x)=\left(x^2-2\times x\times 3+\mathbf{3^2}\right)-\mathbf{3^2}-7$$
$$E(x)=(x-3)^2-9-7$$
$$E(x)=(x-3)^2-16$$
$$E(x)=(x-3)^2-4^2$$
$$E(x)=(x-3+4)(x-3-4)$$
$$E(x)=(x+1)(x-7)$$

$$F(x)=x^2-14x+47$$
$$F(x)=x^2-\mathbf{2\times x\times 7}+47$$
$$F(x)=\left(x^2-2\times x\times 7+\mathbf{7^2}\right)-\mathbf{7^2}+47$$
$$F(x)=(x-7)^2-49+47$$
$$F(x)=(x-7)^2-2$$
$$F(x)=(x-7)^2-\left(\sqrt{2}\right)^2$$
$$F(x)=\left(x-7+\sqrt{2}\right)\left(x-7-\sqrt{2}\right)$$

$$G(x)=x^2+x-6$$
$$G(x)=x^2+\mathbf{2\times x\times \frac{1}{2}}-6$$
$$G(x)=\left(x^2+2\times x\times\frac{1}{2}+\left(\mathbf{\frac{1}{2}}\right)^2\right)-\left(\mathbf{\frac{1}{2}}\right)^2-6$$
$$G(x)=\left(x+\frac{1}{2}\right)^2-\frac{1}{4}-6$$
$$G(x)=\left(x+\frac{1}{2}\right)^2-\frac{25}{4}$$
$$G(x)=\left(x+\frac{1}{2}\right)^2-\left(\frac{5}{2}\right)^2$$
$$G(x)=\left(x+\frac{1}{2}+\frac{5}{2}\right)\left(x+\frac{1}{2}-\frac{5}{2}\right)$$
$$G(x)=(x+3)(x-2)$$

$$H(x)=25x^2-10x-3$$
$$H(x)=\left(\mathbf{5x}\right)^2-\mathbf{2\times 5x\times 1}-3$$
$$H(x)=\left((5x)^2-2\times 5x\times 1+\mathbf{1^2}\right)-\mathbf{1^2}-3$$
$$H(x)=(5x-1)^2-1-3$$
$$H(x)=(5x-1)^2-4$$
$$H(x)=(5x-1)^2-2^2$$
$$H(x)=(5x-1+2)(5x-1-2)$$
$$H(x)=(5x+1)(5x-3)$$