

$x$	$-\infty$		$-4$		$3$		$+\infty$
Signe de $5x+20$		-	0	+		+	
Signe de $-4x+12$		+		+	0	-	
Signe de $(5x+20)(-4x+12)$		-	0	+	0	-	

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$$\begin{aligned}f(x) &= -x^2 + 2x + 7 \\&= -(x^2 - 2x) + 7 \\&= -[(x-1)^2 - 1] + 7 \\&= -(x-1)^2 + 1 + 7 \\&= -(x-1)^2 + 8\end{aligned}$$

$$\begin{aligned}x^2 - 2x + 1 &= (x-1)^2 \\x^2 - 2x &= (x-1)^2 - 1\end{aligned}$$

Réponse 4

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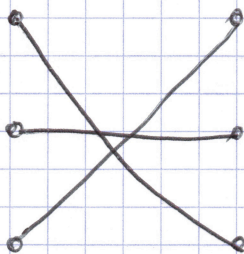
$$\begin{aligned}f(x) &= 2(x-3)^2 - 8 \\&= 2(x^2 - 6x + 9) - 8 \\&= 2x^2 - 12x + 18 - 8\end{aligned}$$

$$\underline{f(x) = 2x^2 - 12x + 10}$$

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$$\begin{aligned}f(x) &= 4x^2 + 8x - 5 \\&= 4\left(x^2 + 2x - \frac{5}{4}\right) \\&= 4\left((x+1)^2 - 1^2 - \frac{5}{4}\right) \\&= 4\left((x+1)^2 - \frac{9}{4}\right) \\&= 4(x+1)^2 - 9\end{aligned}$$

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Détail au verso

$$\begin{aligned}
 -2x^2 - 4x + 3 &= -2(x^2 + 2x) + 3 \\
 &= -2[(x+1)^2 - 1] + 3 \\
 &= -2(x+1)^2 + 2 + 3 \\
 &= -2(x+1)^2 + 5
 \end{aligned}$$

$$\begin{aligned}
 -2x^2 - 8x - 5 &= -2(x^2 + 4x) - 5 \\
 &= -2[(x+2)^2 - 4] - 5 \\
 &= -2(x+2)^2 + 8 - 5 \\
 &= -2(x+2)^2 + 3
 \end{aligned}$$

$$\begin{aligned}
 -2x^2 - 4x - 2 &= -2(x^2 + 2x + 1) \\
 &= -2(x+1)^2
 \end{aligned}$$

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$$\begin{aligned}
 \textcircled{a} \quad f(x) &= 2x^2 - 2x + 3 \\
 &= 2(x^2 - x) + 3 \\
 &= 2\left[\left(x - \frac{1}{2}\right)^2 - \frac{1}{4}\right] + 3 \\
 &= 2\left(x - \frac{1}{2}\right)^2 - \frac{1}{2} + 3
 \end{aligned}$$

$$\underline{f(x) = 2\left(x - \frac{1}{2}\right)^2 + \frac{5}{2}}$$

$$\begin{aligned}
 \textcircled{b} \quad g(x) &= 3x^2 + 6x + 12 \\
 &= 3(x^2 + 2x) + 12 \\
 &= 3[(x+1)^2 - 1] + 12 \\
 &= 3(x+1)^2 - 3 + 12 \\
 \underline{g(x) = 3(x+1)^2 + 9}
 \end{aligned}$$

$$\begin{aligned}
 h(t) &= -5t^2 - 2t + 20 \\
 &= -5(t^2 + 4t) + 20 \\
 &= -5[(t+2)^2 - 4] + 20 \\
 &= -5(t+2)^2 + 20 + 20 \\
 h(t) &= -5(t+2)^2 + 40
 \end{aligned}$$

Développement  
du carré

$$\begin{aligned}
 g(x) &= a \left[ \left(x + \frac{b}{2a}\right)^2 - \frac{b^2 - 4ac}{4a^2} \right] \\
 &= a \left[ x^2 + 2 \times \frac{b}{2a} x + \left(\frac{b}{2a}\right)^2 - \frac{b^2 - 4ac}{4a^2} \right] \\
 &= a \left( x^2 + \frac{b}{a} x + \frac{b^2}{4a^2} - \frac{b^2 - 4ac}{4a^2} \right) \\
 &= a \left( x^2 + \frac{b}{a} x + \frac{b^2 - b^2 + 4ac}{4a^2} \right) \\
 &= a \left( x^2 + \frac{b}{a} x + \frac{4ac}{4a^2} \right) \\
 &= ax^2 + bx + \frac{4ac}{4a}
 \end{aligned}$$

$$\underline{g(x) = ax^2 + bx + c}$$