

Key

4.6 Converting between forms

Convert the following quadratics to standard form:

1. $y = 2(x - 3)(x + 1)$

$$2(x^2 - 2x - 3) = \boxed{2x^2 - 4x - 6}$$

2. $y = 2(x - 1)^2 + 3$

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

Convert to factored form:

3. $y = 2x^2 - 6x - 8$

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

4. $y = (x + 5)^2 - 1$

$$\begin{aligned} (x+5)(x+5) - 1 \\ x^2 + 10x + 25 - 1 \\ x^2 + 10x + 24 \\ y = (x+4)(x+6) \end{aligned}$$

Convert to vertex form:

5. $y = x^2 + 12x - 3$

$$\begin{aligned} x^2 + 12x + \boxed{36} - 3 - \boxed{36} \\ y = (x+6)^2 - 39 \end{aligned}$$

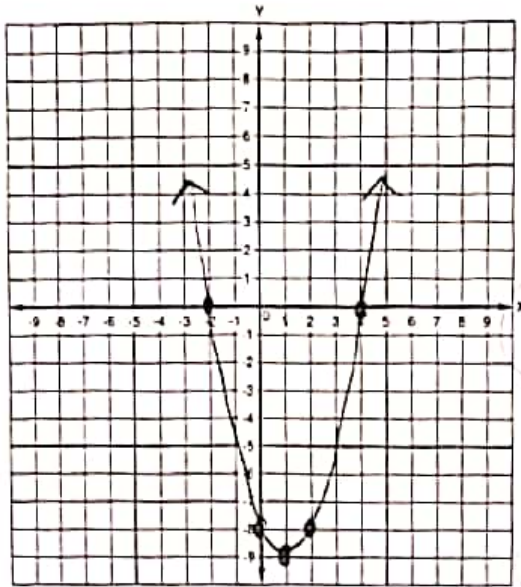
6. $y = (x - 4)(x - 10)$

$$y = x^2 - 14x + 40$$

$$x^2 - 14x + \boxed{49} + 40 - \boxed{49}$$

$$\boxed{(x-7)^2 - 9}$$

Write the equation of the parabola from the given graph:



Vertex: $(1, -9)$

X-int: $(-2, 0)$ $(4, 0)$

$a = 1$

$y = (x+2)(x-4)$

or

$y = (x-1)^2 - 9$

or

$y = x^2 - 2x - 8$

Write the equation of the quadratic from the diagram:

$6x^2 + 13x + 6$

or

$(3x+2)(2x+3)$



x^2	x^2	x^2	x	x
x^2	x^2	x^2	x	x
x	x	x	1	1
x	x	x	1	1
x	x	x	1	1

x^2	x^2	x^2	x^2	x^2	x^2	x	x	x
x	x	x	x	x	x	1	1	1
x	x	x	x	x	x	1	1	1



$6x^2 + 15x + 6$

or $(x+2)(6x+3)$