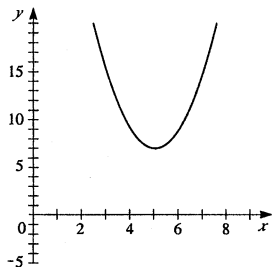


$$11. \quad y = 2x^2 - 20x + 57$$

Vertex: $y = 2x^2 - 20x + 57 = 2(x^2 - 10x) + 57$
 $= 2(x^2 - 10x + 25) + 57 - 50 = 2(x - 5)^2 + 7$. Vertex is at $(5, 7)$.

x -intercepts: $y = 0 \Rightarrow 0 = 2x^2 - 20x + 57 = 2(x - 5)^2 + 7 \Leftrightarrow$
 $2(x - 5)^2 = -7$. Since this last equation has no real solution, there are
 no x -intercepts.

y -intercepts: $x = 0 \Rightarrow y = 57$. The y -intercept is at $y = 57$.



$$13. \quad y = -4x^2 - 16x + 3$$

Vertex: $y = -4x^2 - 16x + 3 = -4(x^2 + 4x) + 3$
 $= -4(x^2 + 4x + 4) + 3 + 16 = -4(x + 2)^2 + 19$. Vertex is at
 $(-2, 19)$.

x -intercepts: $y = 0 \Rightarrow 0 = -4x^2 - 16x + 3 = -4(x + 2)^2 + 19$
 $\Leftrightarrow 4(x + 2)^2 = 19 \Leftrightarrow (x + 2)^2 = \frac{19}{4} \Rightarrow$

$x + 2 = \pm \sqrt{\frac{19}{4}} = \pm \frac{\sqrt{19}}{2} \Leftrightarrow x = -2 \pm \frac{\sqrt{19}}{2}$. The x -intercepts are
 at $x = -2 - \frac{\sqrt{19}}{2}$ and $x = -2 + \frac{\sqrt{19}}{2}$.

y -intercepts: $x = 0 \Rightarrow y = 3$. The y -intercept is at $y = 3$.

