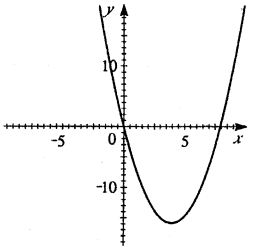
1. $y = x^2 - 8x$

Vertex: $y = x^2 - 8x = x^2 - 8x + 16 - 16 = (x-4)^2 - 16$. Vertex is at $(4, -16)$.

x-intercepts: $y = 0 \quad \Rightarrow \quad 0 = x^2 - 8x = x(x-8)$. So $x = 0$ or $x = 8$. The x-intercepts are at $x = 0$ and $x = 8$.

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

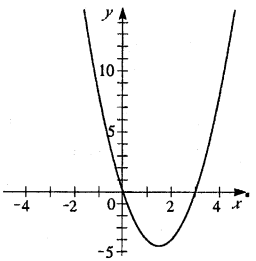


3. $y = 2x^2 - 6x$

Vertex: $y = 2x^2 - 6x = 2(x^2 - 3x) = 2\left[x^2 - 3x + \left(\frac{3}{2}\right)^2\right] - \frac{9}{2}$
$= 2\left(x - \frac{3}{2}\right)^2 - \frac{9}{2}$. Vertex is at $\left(\frac{3}{2}, -\frac{9}{2}\right)$.

x-intercepts: $y = 0 \quad \Rightarrow \quad 0 = 2x^2 - 6x = 2x(x-3) \quad \Rightarrow \quad x = 0$ or $x = 3$. The x-intercepts are at $x = 0$ and $x = 3$.

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

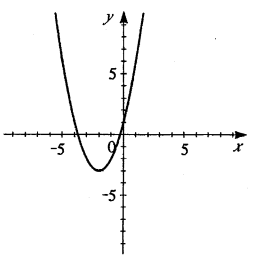


5. $y = x^2 + 4x + 1$

Vertex: $y = x^2 + 4x + 1 = x^2 + 4x + 4 - 4 + 1 = (x+2)^2 - 3$. Vertex is at $(-2, -3)$.

x-intercepts: $y = 0 \quad \Rightarrow \quad 0 = x^2 + 4x + 1$. Using the quadratic formula, $x = \frac{-4 \pm \sqrt{12}}{2} = \frac{-4 \pm 2\sqrt{3}}{2} = -2 \pm \sqrt{3}$. The x-intercepts are at $x = -2 - \sqrt{3}$ and $x = -2 + \sqrt{3}$.

y-intercepts: $x = 0 \quad \Rightarrow \quad y = 1$. The y-intercept is at $y = 1$.

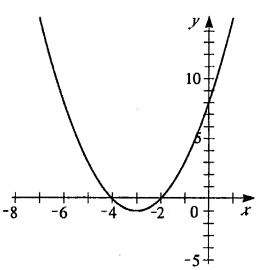


7. $y = x^2 + 6x + 8$

Vertex: $y = x^2 + 6x + 8 = (x^2 + 6x) + 8 = (x^2 + 6x + 9) + 8 - 9$
$= (x+3)^2 - 1$. Vertex is at $(-3, -1)$.

x-intercepts: $y = 0 \quad \Rightarrow \quad 0 = x^2 + 6x + 8(x+2)(x+4) \quad \Rightarrow$ $x = -2$ or $x = -4$. The x-intercepts are at $x = -2$ and $x = -4$.

y-intercepts: $x = 0 \quad \Rightarrow \quad y = 8$. The y-intercept is at $y = 8$.



9. $y = 2x^2 + 4x + 3$

Vertex: $y = 2x^2 + 4x + 3 = 2(x^2 + 2x) + 3$
$= 2(x^2 + 2x + 1) + 3 - 2 = 2(x+1)^2 + 1$. Vertex is at $(-1, 1)$.

x-intercepts: $y = 0 \quad \Rightarrow \quad 0 = 2x^2 + 4x + 3 = 2(x+1)^2 + 1 \quad \Leftrightarrow$ $2(x+1)^2 = -1$. Since this last equation has no real solution, there are no x-intercepts.

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