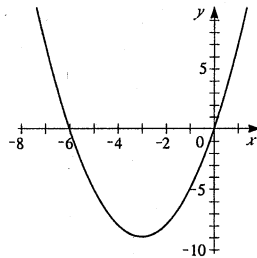2. $y = x^2 + 6x$

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

x-intercept: $y = 0 \Rightarrow x(x+6) = 0 \Leftrightarrow x = -6$ or $x = 0$. The x-intercepts are at $x = -6$ and $x = 0$.

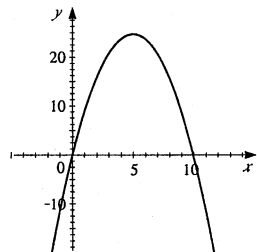y-intercept: $x = 0 \Rightarrow y = 0$. The y-intercept is at $y = 0$.

4. $y = -x^2 + 10x$

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

x-intercept: $y = 0 \Rightarrow 0 = -x^2 + 10x = -x(x - 10) = 0 \Rightarrow x = 0$ or $x = 10$. The x-intercepts are at $x = 0$ and $x = 10$

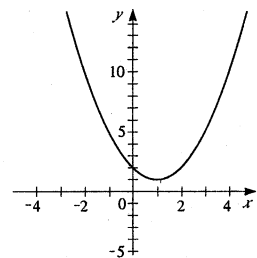y-intercept: $x = 0 \Rightarrow y = 0$. The y-intercept is at $y = 0$.

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

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

x-intercept: $y = 0 \Rightarrow (x-1)^2 + 1 = 0 \Leftrightarrow (x-1)^2 = -1$. Since this last equation has no real solution, there is no x-intercept.

y-intercept: $x = 0 \Rightarrow y = 2$. The y-intercept is at $y = 2$.

8. $y = -x^2 - 4x + 4$

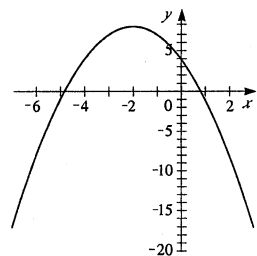Vertex: $y = -x^2 - 4x + 4 = -(x^2 + 4x) + 4 = -(x^2 + 4x + 4) + 4 + 4 = -(x+2)^2 + 8$. Vertex is at $(-2, 8)$.

x-intercept: $y = 0 \Rightarrow 0 = -x^2 - 4x + 4 \Leftrightarrow 0 = x^2 + 4x - 4$. Using the quadratic formula, $x = \frac{-4 \pm \sqrt{(4)^2 - 4(1)(-4)}}{2(1)} = \frac{-4 \pm \sqrt{32}}{2} = \frac{2(-2 \pm 2\sqrt{2})}{2} = -2 \pm 2\sqrt{2}$. The x-intercepts are at $x = -2 + 2\sqrt{2}$ and $x = -2 - 2\sqrt{2}$.

y-intercept: $x = 0 \Rightarrow y = 4$. The y-intercept is at $y = 4$.

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

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

x-intercept: $y = 0 \Rightarrow 0 = -3(x-1)^2 + 1 = 0 \Leftrightarrow (x-1)^2 = \frac{1}{3} \Rightarrow x - 1 = \pm\sqrt{\frac{1}{3}} \Leftrightarrow x = 1 \pm \sqrt{\frac{1}{3}}$. The x-intercepts are at $x = 1 + \sqrt{\frac{1}{3}}$ and $x = 1 - \sqrt{\frac{1}{3}}$.

y-intercept: $x = 0 \Rightarrow y = -2$. The y-intercept is at $y = -2$.