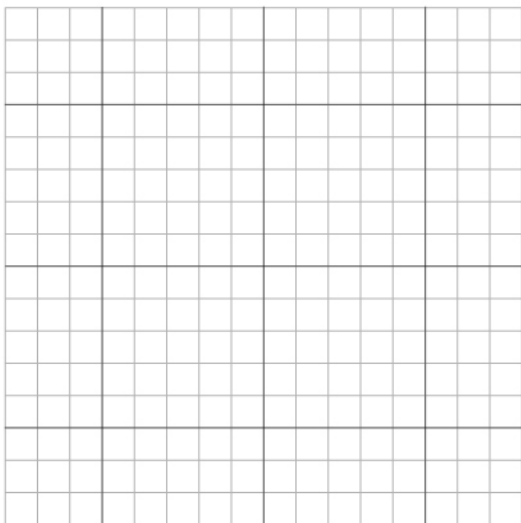


# Analysis of Quadratic Functions

Find the vertex, x-and y-intercepts, domain and range of the given quadratic functions. Then, draw the graph.

①  $f(x) = 2x^2 + 5x - 1$



Vertex:

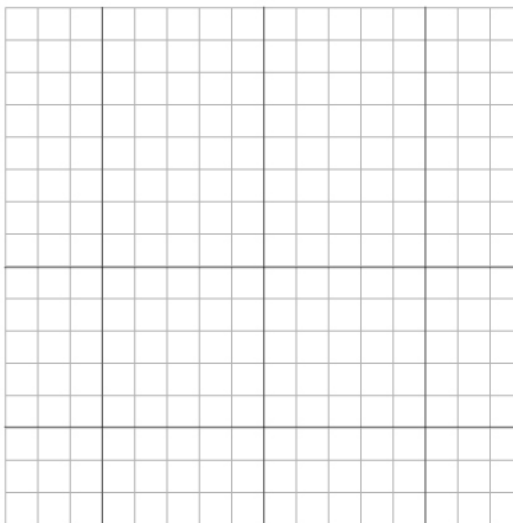
x-intercept:

y-intercept:

Domain:

Range:

②  $f(x) = -x^2 + 3x - 6$



Vertex:

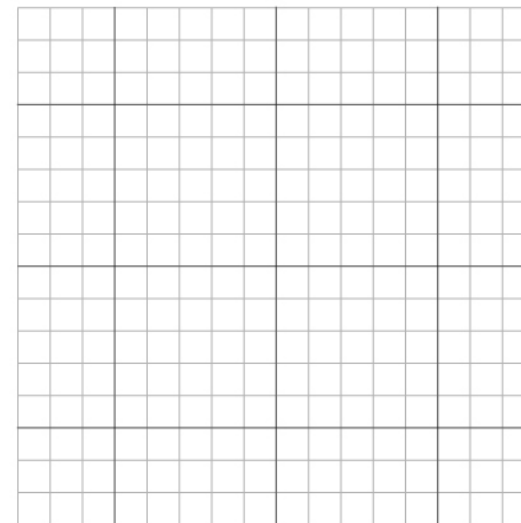
x-intercept:

y-intercept:

Domain:

Range:

③  $f(x) = x^2 + x - 12$



Vertex:

x-intercept:

y-intercept:

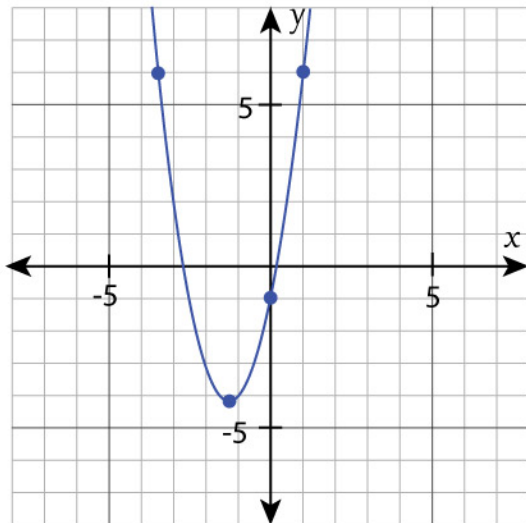
Domain:

Range:

# Analysis of Quadratic Functions

## Answers

①  $f(x) = 2x^2 + 5x - 1$



Vertex:  $\left(-\frac{5}{4}, -\frac{33}{8}\right)$

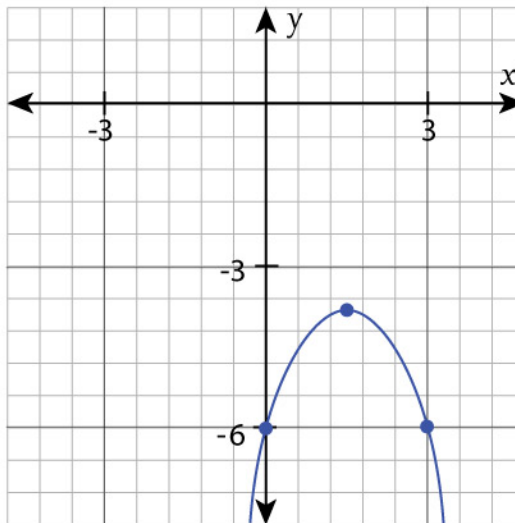
x-intercept:  $\left(\frac{-5 + \sqrt{33}}{4}, 0\right), \left(\frac{-5 - \sqrt{33}}{4}, 0\right)$

y-intercept:  $(0, -1)$

Domain:  $\left[ \begin{array}{l} \text{Solution: } -\infty < x < \infty \\ \text{Interval notation: } (-\infty, \infty) \end{array} \right]$

Range:  $\left[ \begin{array}{l} \text{Solution: } f(x) \geq -\frac{33}{8} \\ \text{Interval notation: } \left[-\frac{33}{8}, \infty\right) \end{array} \right]$

②  $f(x) = -x^2 + 3x - 6$



Vertex:  $\left(\frac{3}{2}, -\frac{15}{4}\right)$

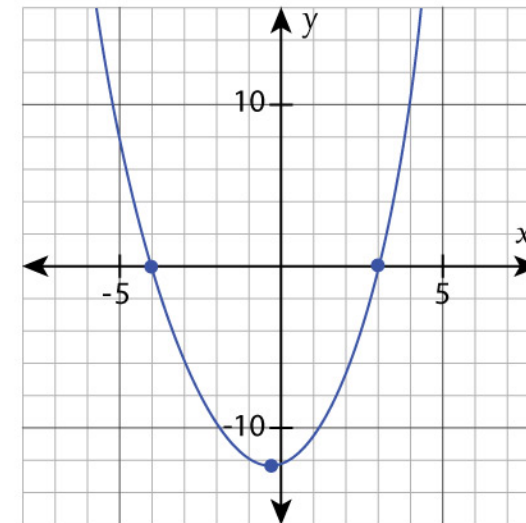
x-intercept: No x-intercept

y-intercept:  $(0, -6)$

Domain:  $\left[ \begin{array}{l} \text{Solution: } -\infty < x < \infty \\ \text{Interval notation: } (-\infty, \infty) \end{array} \right]$

Range:  $\left[ \begin{array}{l} \text{Solution: } f(x) \leq -\frac{15}{4} \\ \text{Interval notation: } \left(-\infty, -\frac{15}{4}\right] \end{array} \right]$

③  $f(x) = x^2 + x - 12$



Vertex:  $\left(-\frac{1}{2}, -\frac{49}{4}\right)$

x-intercept:  $(3, 0), (-4, 0)$

y-intercept:  $(0, -12)$

Domain:  $\left[ \begin{array}{l} \text{Solution: } -\infty < x < \infty \\ \text{Interval notation: } (-\infty, \infty) \end{array} \right]$

Range:  $\left[ \begin{array}{l} \text{Solution: } f(x) \geq -\frac{49}{4} \\ \text{Interval notation: } \left[-\frac{49}{4}, \infty\right) \end{array} \right]$