

1. Graph the parabola:

$$f(x) = x^2 + 8x - 7$$

Vertex:

x-intercepts:

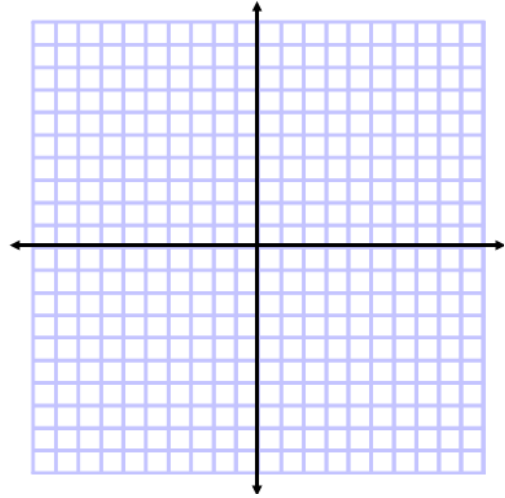
y-intercepts:

Domain:

Range:

Axis of Symmetry:

What is the relationship between the y-intercept and the constant coefficient?



2. Graph the parabola:

$$f(x) = x^2 + 6x + 1$$

Vertex:

x-intercepts:

y-intercepts:

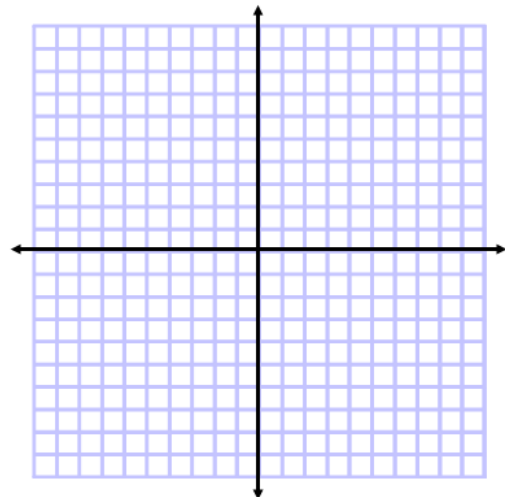
Domain:

Range:

Axis of Symmetry:

What is the relationship between the x-intercepts and the axis of symmetry?

What is the relationship between the axis of symmetry and the coefficient of x?



3. Let $f(x) = x^3 - 10x^2 + 7x + 2$

a) What is the remainder when you divide $f(x)$ by $x - 5$?

b) Find the value of $f(5)$.

c) The point $(5, y)$ is on the graph of f . What is y ?

d) Is $x = 5$ a root of the polynomial $f(x)$?

e) What is the remainder when you divide $f(x)$ by $x - 1$?

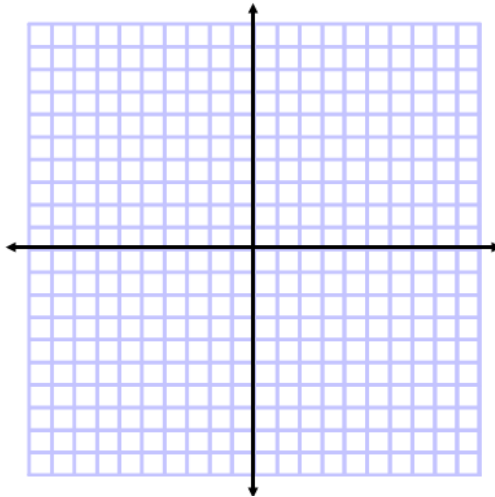
f) Find the value of $f(1)$.

g) The point $(1, y)$ is on the graph of f . What is y ?

h) Divide $f(x)$ by $x - 1$ to find all of the zeros of $f(x)$.

i) What is the end behavior of f . Explain your answer.

Sketch the graph of f in the axes provided. Label the zeros and the point at $x = 5$.



4. Let $f(x) = (x-3)(3x-7)^2(-x+2)$

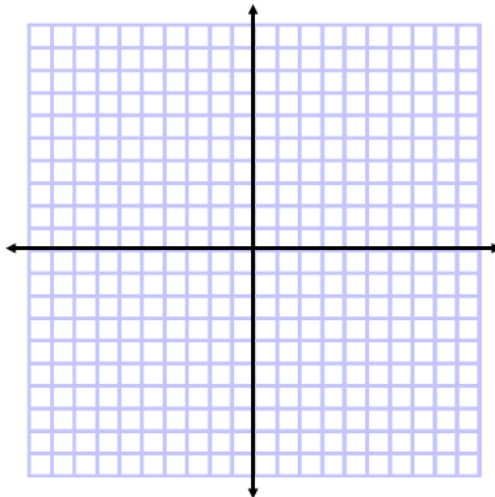
a. Find the roots of f along with their multiplicities. Identify the behavior of the graph of f around each of these roots (bounces or crosses).

b. Find the end behavior of f . Explain your reasoning.

c. Find the y-intercept of f .

d. Find the constant coefficient of f . What is the relationship between the constant coefficient and the y-intercept?

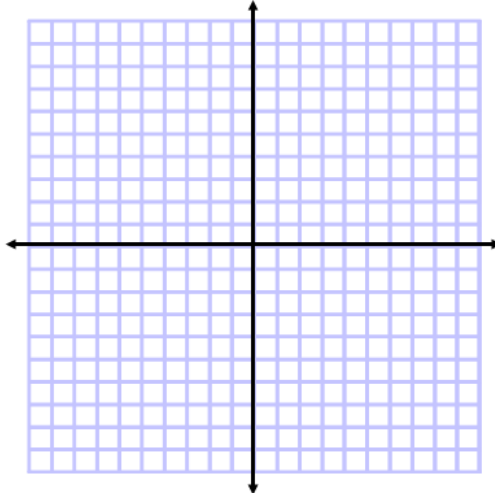
Sketch the graph of f in the axes provided. Label the zeros and the point at $x = 5$.



4. Let $f(x) = x^2$ and $g(x) = 2x - 1$

a. Find $f \circ g(x)$

b. Graph $f \circ g(x)$



c. Find $g \circ f(x)$

d. Graph $g \circ f(x)$

