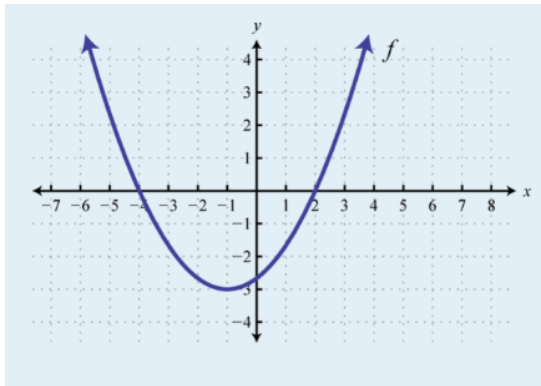
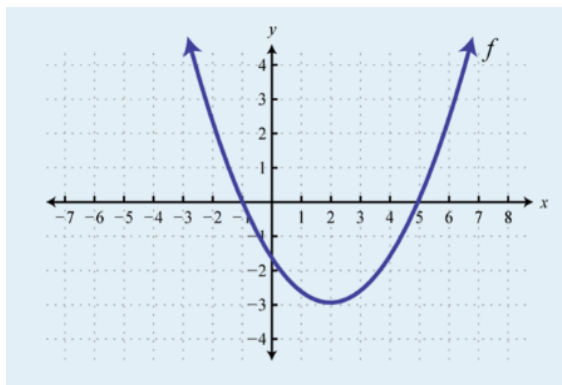


Exercise – Quadratic Inequality

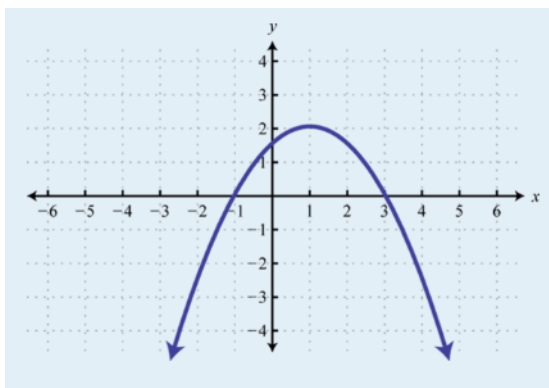
1. A robotics manufacturing company has determined that its weekly profit in thousands of dollars is modeled by $P(n) = -n^2 + 30n - 200$ where n represents the number of units it produces and sells. How many units must the company produce and sell to maintain profitability. (Hint: Profitability occurs when profit is greater than zero.)
2. The height in feet of a projectile shot straight into the air is given by $h(t) = -16t^2 + 400t$ where t represents the time in seconds after it is fired. In what time intervals is the projectile under 1,000 feet? Round to the nearest tenth of a second.
3. Determine whether or not the given value is a solution:
 - a. $x^2 - x + 1 < 0$; $x = -1$
 - b. $x^2 + x - 1 > 0$; $x = -2$
 - c. $4x^2 - 12x + 9 \leq 0$; $x = 32$
 - d. $5x^2 - 8x - 4 < 0$; $x = -25$
 - e. $3x^2 - x - 2 \geq 0$; $x = 0$
 - f. $4x^2 - x + 3 \leq 0$; $x = -1$
 - g. $2 - 4x - x^2 < 0$; $x = 12$
4. Given the graph of f determine the solution set of inequality given in each part:
 - a. $f(x) \leq 0$



b. $f(x) \geq 0$



c. $f(x) \geq 0$



d. $f(x) \leq 0$

