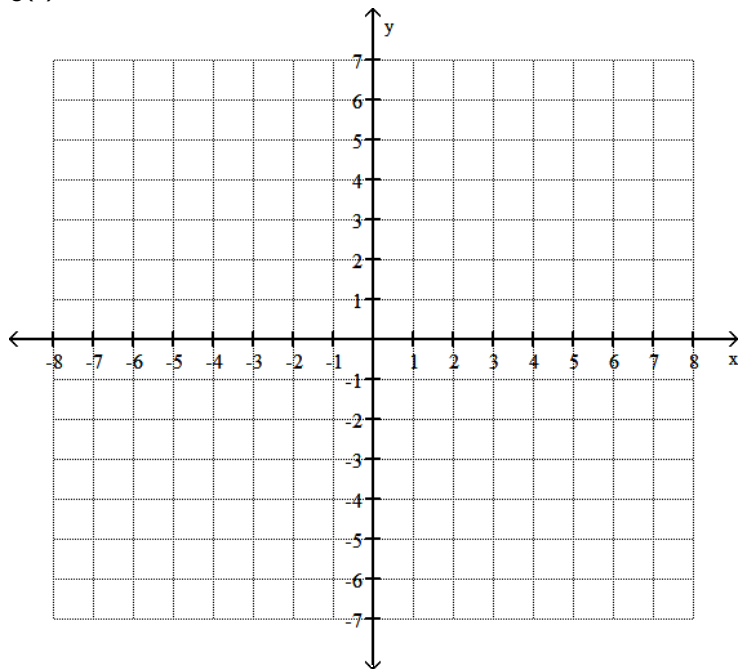


YOU MUST SHOW ALL WORK TO RECEIVE CREDIT

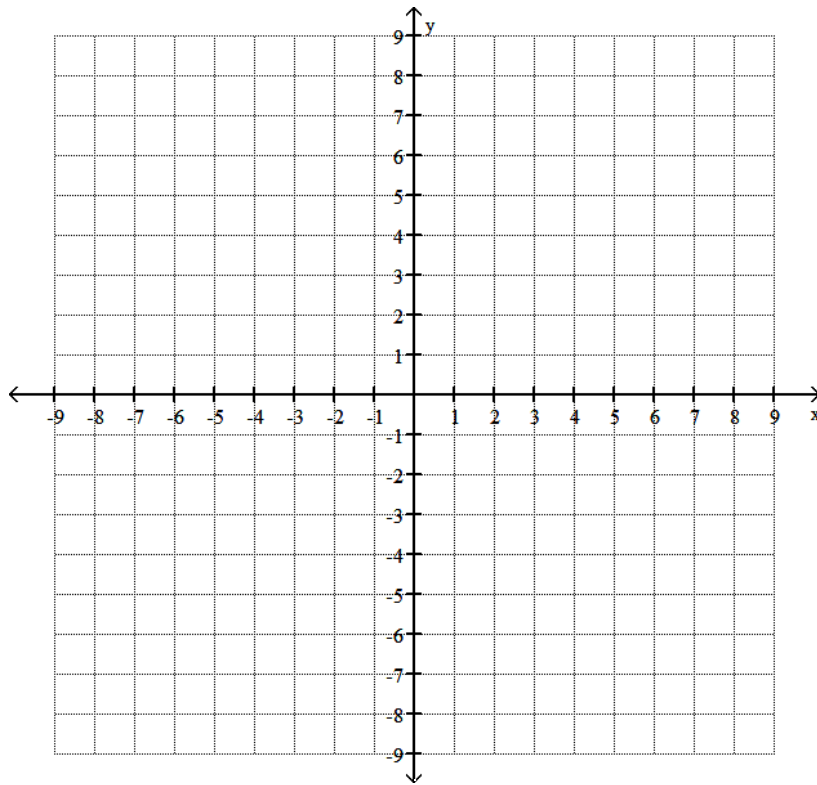
Find the vertex, the y-intercept, and the x-intercepts (if any exist), and graph the function.

1) $g(x) = x^2 - 4x + 8$



Graph.

2) $y = -4(x + 3)^2 - 3$



Solve the problem.

- 3) The owner of a video store has determined that the cost C , in dollars, of operating the store is approximately given by $C(x) = 2x^2 - 18x + 630$, where x is the number of videos rented daily. Find the lowest cost to the nearest dollar.

- 4) The profit that the vendor makes per day by selling x pretzels is given by the function $P(x) = -0.002x^2 + 1.6x - 100$. Find the number of pretzels that must be sold to maximize profit.

For problems 5 and 6, find the vertical asymptotes, if any, of the graph of the rational functions.

5) $\frac{x - 36}{x^2 - 9x + 14}$

6) $Q(x) = \frac{x + 9}{x^2 + 9}$

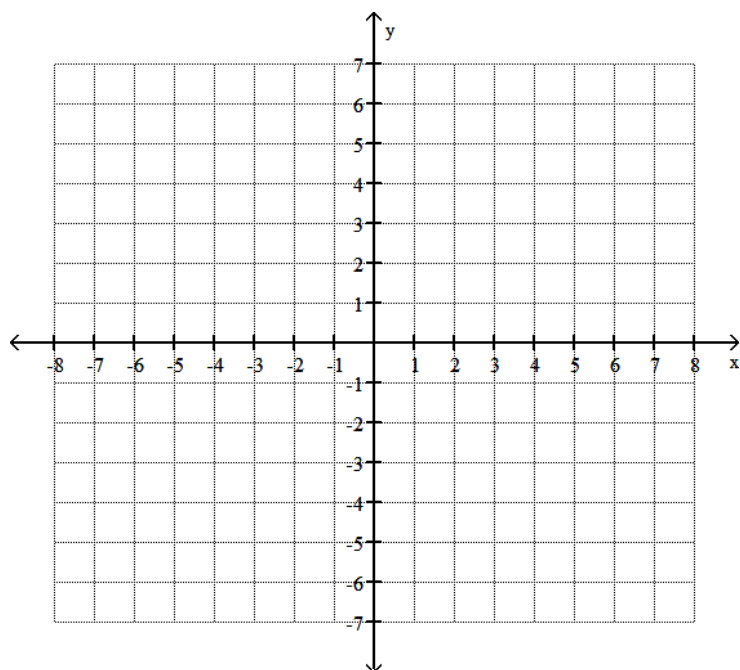
For problems 7 and 8, find the horizontal asymptote, if any, of the graph of the rational functions.

7) $f(x) = \frac{6x}{3x^2 + 1}$

8) $f(x) = \frac{x^2 + 6x + 5}{2 - x^2}$

Graph the rational function.

9) $f(x) = \frac{2x}{x-2}$



Solve the polynomial inequality. Express the solution set in interval notation.

10) $2x^2 + 7x - 4 \leq 0$

Solve the inequality. Express the solution using interval notation.

11) $(x + 3)(x - 3)^2 > 0$

Solve.

12) $\frac{x}{x - 6} < 4$