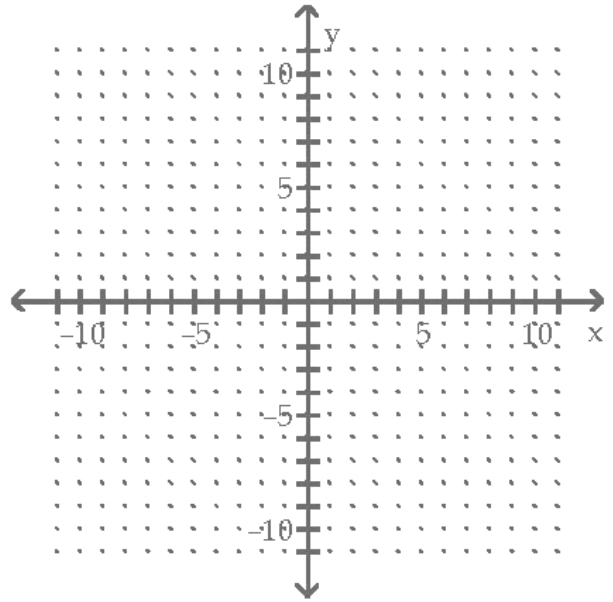


YOU MUST SHOW ALL OF YOUR WORK to receive full credit for the problem. The more work you show on your paper leading to your solution will give me more opportunity to award partial credit. Clearly indicate your solution to the problem.

1. (4 points) Graph $f(x)=(x-3)^2$



2. (4 points) Bring $f(x)=2x^2+4x+5$ to the vertex form $f(x)=a(x-h)^2+k$ (hint complete the square.) Then decide whether the parabola opens up or down, find the vertex and axis of symmetry.

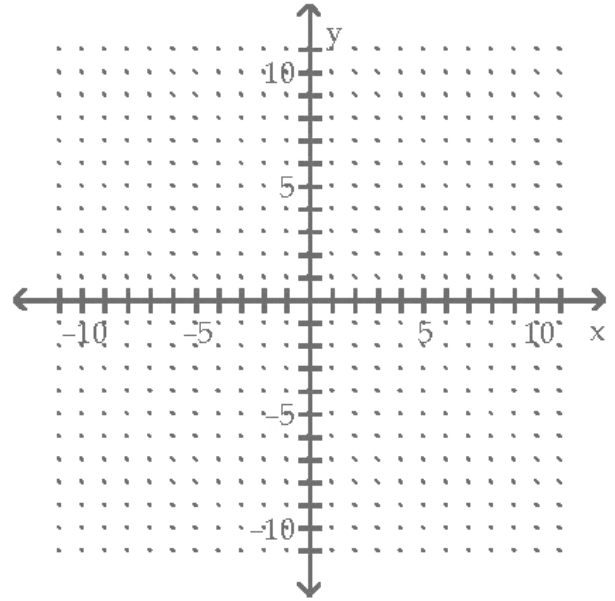
Vertex form:

Vertex:

Axis of symmetry:

Opens up or down:

3. (4 points) Graph $f(x) = -3x^2 + 12x - 8$ by first finding the x and y-intercepts, vertex and deciding whether it opens up or down.



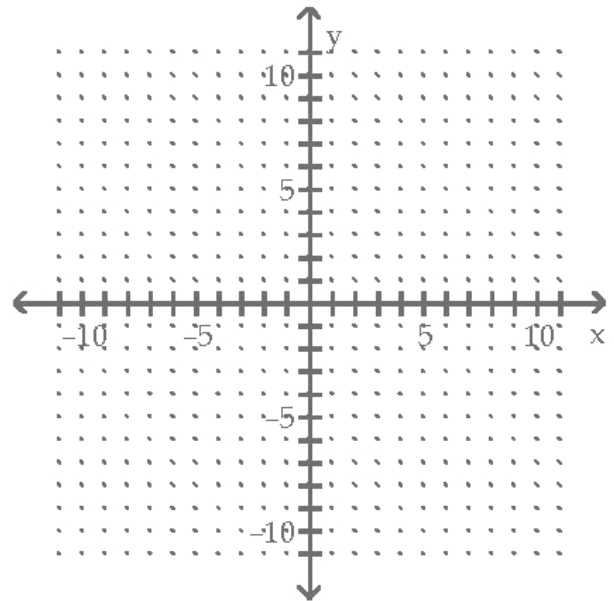
4. (4 points) Solve the inequalities.
(a) $x^2 - 3x - 10 \leq 0$

(b) (4 points) $\frac{3x+7}{x-3} > 0$

(c) (4 points) $(x-3)^2 < 0$

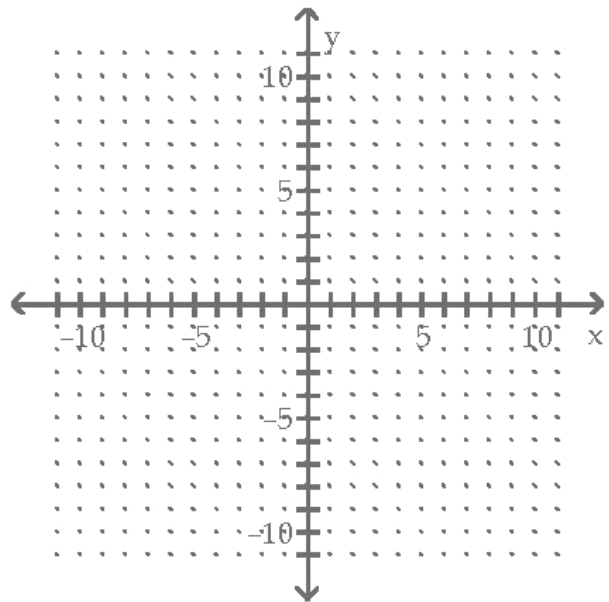
5. (4 points) Given $f(x) = \frac{1}{2}x - \frac{5}{2}$, find the inverse function $f^{-1}(x)$.

6. (4 points) Graph $y=2^x+3$



7. (4 points) Solve $3^x = \frac{1}{81}$

8. (4 points) Graph $y = \log_3 x$



9. Express each logarithm as a sum or difference of logarithms or numbers. Assume all variables represent positive numbers.

(a) (4 points) $\log_3 \frac{\sqrt{xz}}{y^2}$

(b) (4 points) $\log \frac{ab}{10}$

10. Write each expression as a single logarithm. Assume all variables represent positive numbers.

(a) (4 points) $2\log_2 x + \log_2 y - \frac{1}{2}\log_2 x$

(b) (4 points) $2\log_b x + \log_b y$

11. Solve.

(a) (4 points) $e^x = 2$

(b) (4 points) $\log_2(x+5) - \log_2(x-1) = \log_2 3$

(c) (4 points) $\log_2 x + \log_2(x-7) = 3$

(d) (4 points) $\log x + 1 = -2$

12. (4 points) \$1000 is invested in an account that pays 5% interest compounded continuously. How long would it take for the initial investment to double? Use $A = Pe^{rt}$