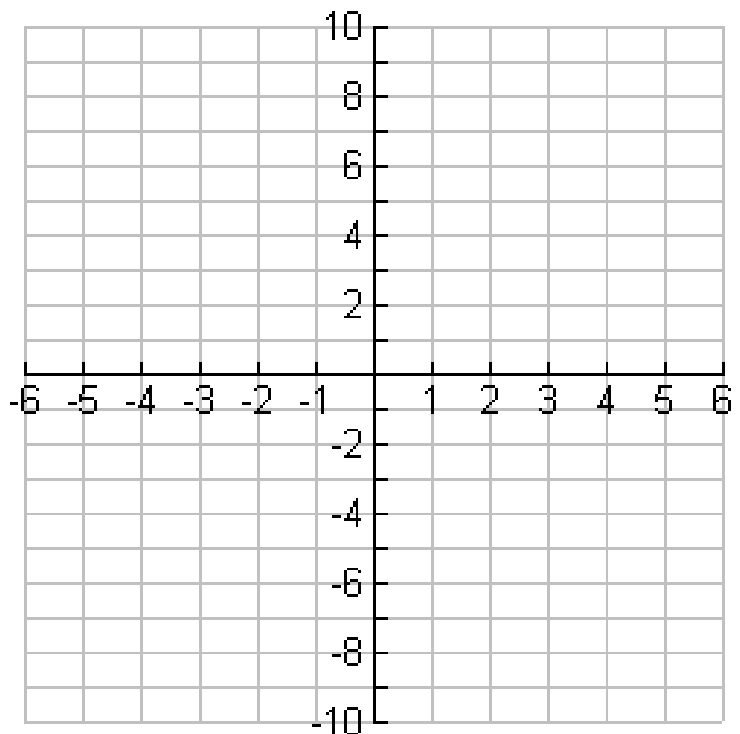


Graphing Quadratic Functions Exploration

- Using a graphing calculator, graph the function $f(x) = x^2$; sketch the graph on the grid using 5 exact points.
 - What is the domain?
 - What is the range?
- Graph (in a different color) $f(x) = x^2 + 2$ on the same graph using 5 exact points. Describe the difference between this graph and the graph of $f(x) = x^2$.
 - What is the domain?
 - What is the range?
- Graph (in a different color) $f(x) = x^2 - 3$ on the same graph using 5 exact points. Describe the difference between this graph and the graph of $f(x) = x^2$.
 - What is the domain?
 - What is the range?

- Describe the effect of k on the equation $f(x) = x^2 + k$

- Create and graph your own function and determine if your hypothesis (answer from #4) is correct.



6. Graph (in a different color) $f(x)=(x+2)^2$ on the provided graph using 5 exact points. Describe the difference between this graph and the graph of $f(x)=x^2$.

a. What is the domain?

b. What is the range?

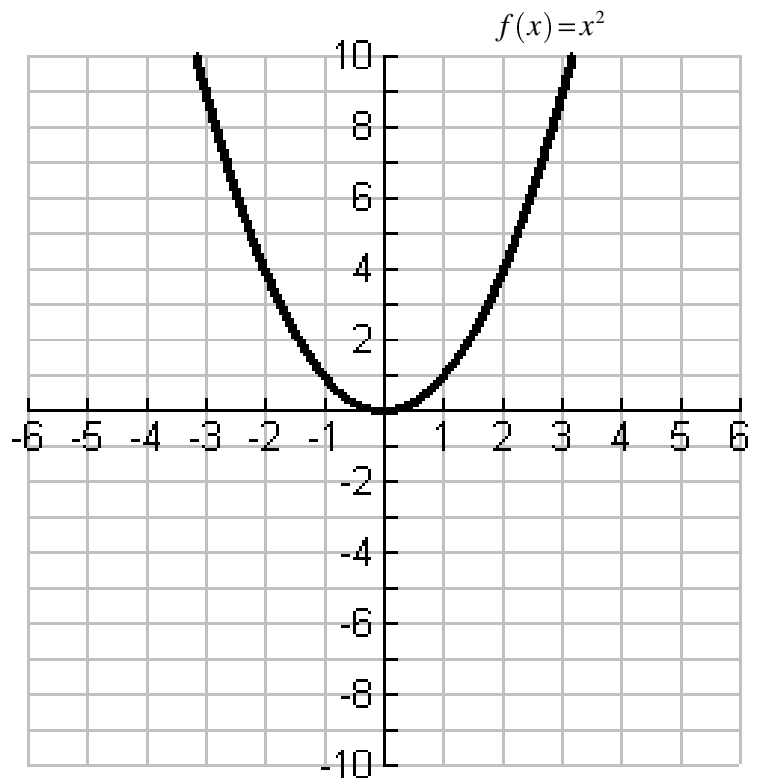
7. Graph (in a different color) $f(x)=(x-3)^2$ on the same graph using 5 exact points. Describe the difference between this graph and the graph of $f(x)=x^2$.

a. What is the domain?

b. What is the range?

8. Describe the effect of h on the equation $f(x)=(x-h)^2$

9. Create and graph your own function and determine if your hypothesis (answer from #8) is correct.



10. Graph (in a different color) $f(x) = 2x^2$ on the provided graph using 5 exact points. Describe the difference between this graph and the graph of $f(x) = x^2$.

- a. What is the domain?
- b. What is the range?

11. Graph (in a different color) $f(x) = \frac{1}{2}x^2$ on the same graph using 5 exact points. Describe the difference between this graph and the graph of $f(x) = x^2$.

- a. What is the domain?
- b. What is the range?

12. Graph (in a different color) $f(x) = -x^2$ on the provided graph using 5 exact points. Describe the difference between this graph and the graph of $f(x) = x^2$.

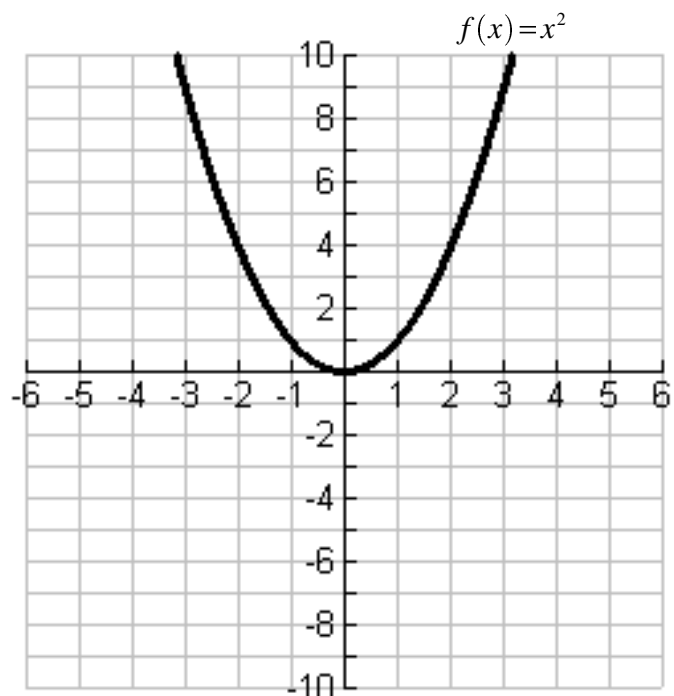
- a. What is the domain?
- b. What is the range?

13. Graph (in a different color) $f(x) = -3x^2$ on the same graph using 5 exact points. Describe the difference between this graph and the graph of $f(x) = x^2$.

- a. What is the domain?
- b. What is the range?

14. Describe the effect of a on the equation $f(x) = ax^2$

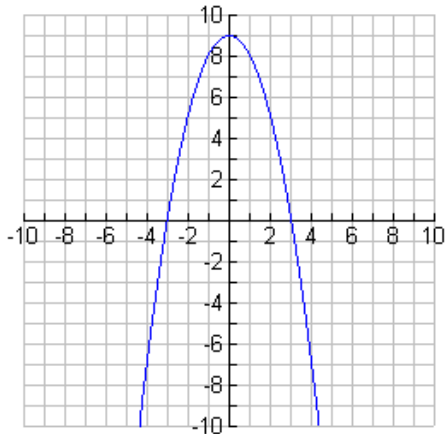
15. Create and graph your own function and determine if your hypothesis (answer from #14) is correct.



Practice A – Graphing Quadratic Functions

Write the equation of the parabolas graphed below. Use your calculator to check your answer. Verify at least 3 points.

1.



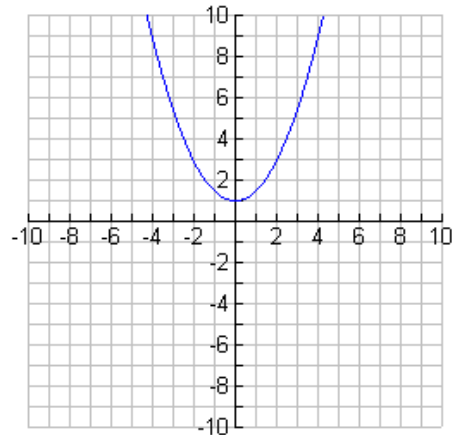
Equation: _____

Vertex: _____

Domain: _____

Range: _____

2.



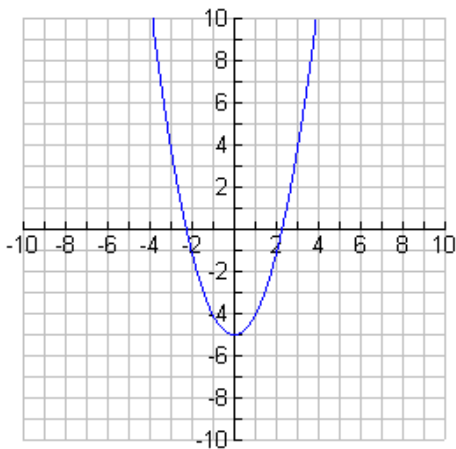
Equation: _____

Vertex: _____

Domain: _____

Range: _____

3.



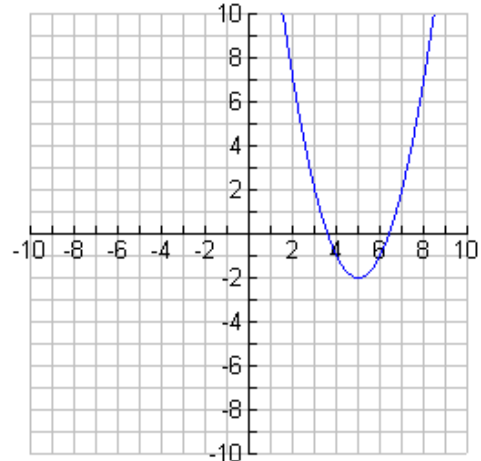
Equation: _____

Vertex: _____

Domain: _____

Range: _____

4.



Equation: _____

Vertex: _____

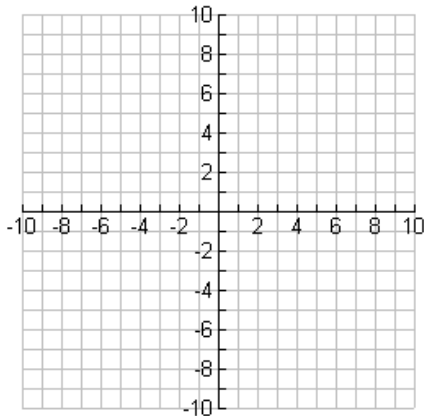
Domain: _____

Range: _____

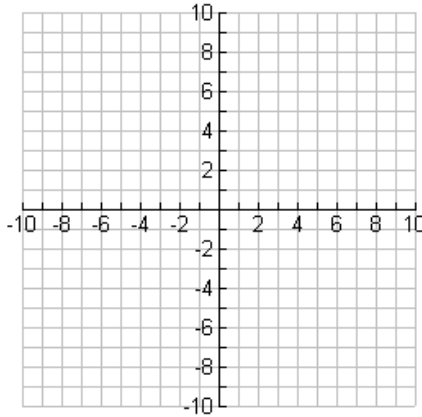
Practice B – Graphing Quadratic Functions

In the following functions, the transformations have been combined on the quadratic function that you just discovered. Graph the following functions with at least 3 precise points.

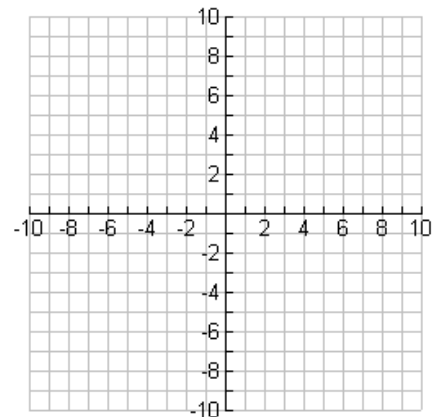
1. $f(x) = (x + 2)^2 - 3$



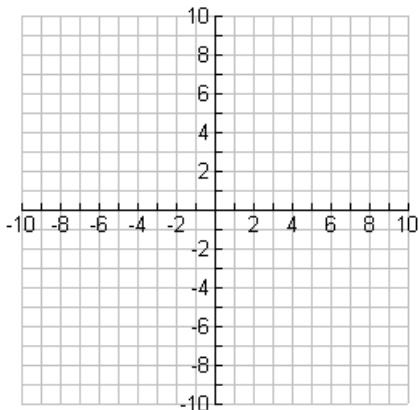
2. $f(x) = -(x - 1)^2 + 4$



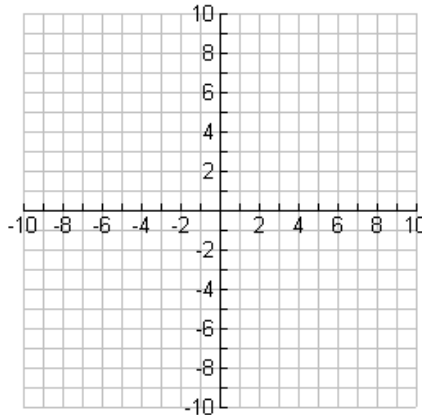
3. $f(x) = 2(x - 2)^2 - 1$



4. $f(x) = -\frac{1}{2}(x + 2)^2$



5. $f(x) = 3x^2 - 5$



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

