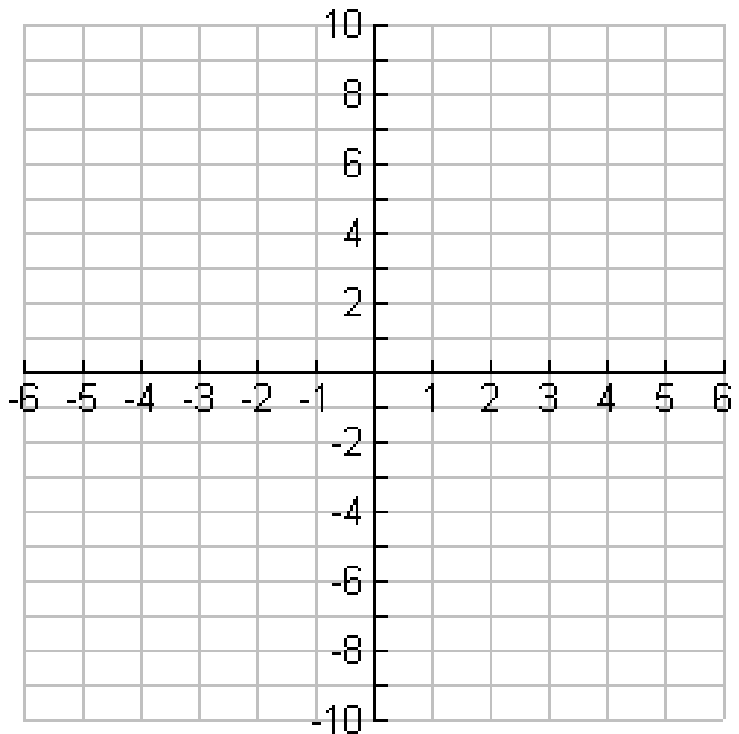


## Graphing Quadratic Functions Exploration

- 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?

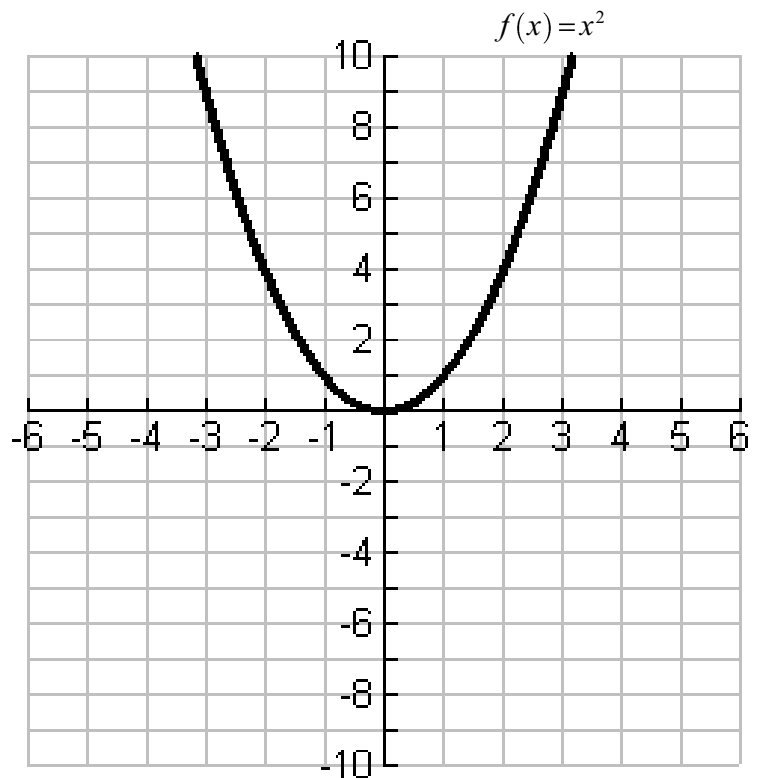
7. Graph (in a different color)  $f(x)=(x-3)^2$  on the same graph using 5 exact points. Describe the difference between this graph and the graph of  $f(x)=x^2$ .

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  $f(x) = x^2$ .

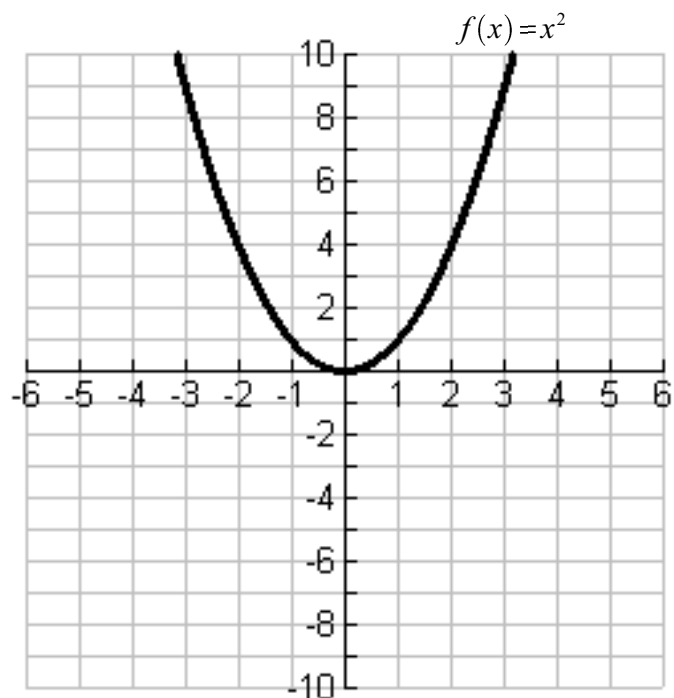
- a. What is the domain?
- b. What is the range?

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  $f(x) = ax^2$

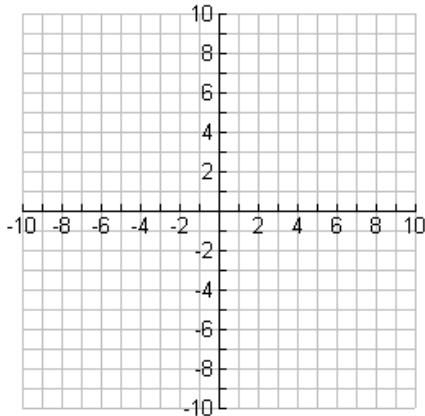
15. Create and graph your own function and determine if your hypothesis (answer from #14) is correct.



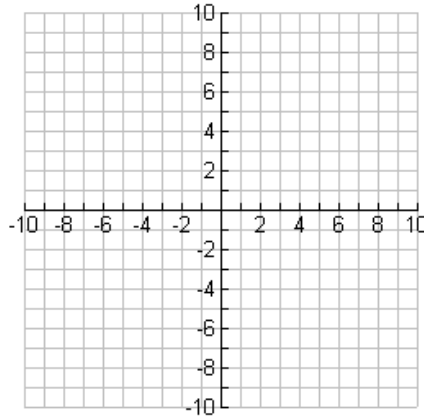
## Practice B – Graphing Quadratic Functions

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.

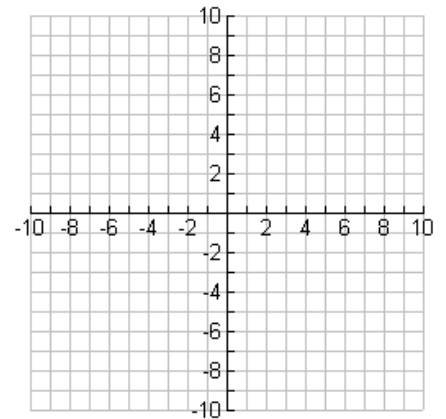
1.  $f(x) = (x + 2)^2 - 3$



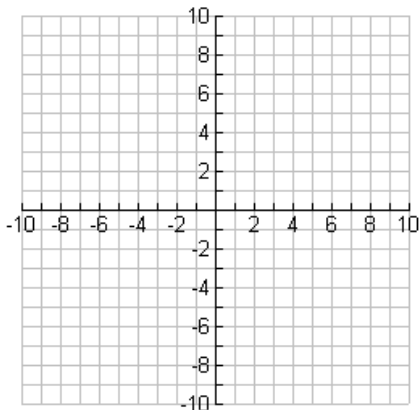
2.  $f(x) = -(x - 1)^2 + 4$



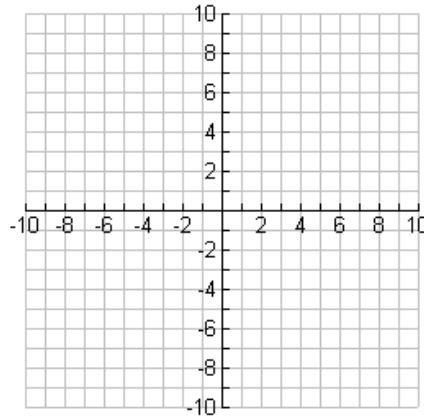
3.  $f(x) = 2(x - 2)^2 - 1$



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



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



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

