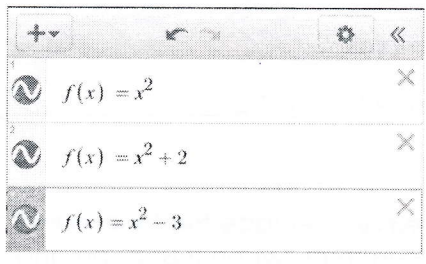


Investigate

Transformation of Quadratics

Created for you by Ms. Nhotsouanh

Use a Chromebook and go to <https://www.desmos.com/> then click on Start Graphing. Use desmos to graph the function(s) below. Write the domain and range using both notations.



Fold along solid line.

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

a. What is the domain? all real #s, $(-\infty, \infty)$

b. What is the range? $y \geq 0$, $[0, \infty)$

2. $f(x) = x^2 + 2$

a. What is the domain? all real #s, $(-\infty, \infty)$

b. What is the range? $y \geq 2$, $[2, \infty)$

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

a. What is the domain? all real #s, $(-\infty, \infty)$

b. What is the range? $y \geq -3$, $[-3, \infty)$

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

If k is positive the function moves up and if k is negative the function moves down.

Name: Key

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Glue on page 57

Delete graph #2 and replace the function with $f(x) = (x + 2)^2$ then describe the difference between this graph and the graph of $f(x) = x^2$.

The function moved to the left 2 units.

What is the domain? all real #s, $(-\infty, \infty)$
What is the range? $y \geq 0$ $[0, \infty)$

Delete graph #3 and replace the function with $f(x) = (x - 3)^2$ then describe the difference between this graph and the graph of $f(x) = x^2$.

The function moved to the right 3 units.

What is the domain? all real #s, $(-\infty, \infty)$
What is the range? $y \geq 0$ $[0, \infty)$

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

h is negative the function moved to the right.

Delete graph #2 and replace the function with $f(x) = 2x^2$ then describe the difference between this graph and the graph of $f(x) = x^2$.

The function got narrower when a is greater than 1.

What is the domain? all real #s, $(-\infty, \infty)$
What is the range? $y \geq 0$ $[0, \infty)$

10. Delete graph #3 and replace the function with $f(x) = \frac{1}{2}x^2$ then describe the difference between this graph and the graph of $f(x) = x^2$.

The function got wider when a is less than 1.

a. What is the domain? all real #s, $(-\infty, \infty)$
b. What is the range? $y \geq 0$ $[0, \infty)$

11. Delete graph #2 and replace the function with $f(x) = -x^2$ then describe the difference between this graph and the graph of $f(x) = x^2$.

The function is upside down when a is negative.

a. What is the domain? all real #s, $(-\infty, \infty)$
b. What is the range? $y \leq 0$ $(-\infty, 0]$

12. Delete graph #3 and replace the function with $f(x) = -3x^2$ then describe the difference between this graph and the graph of $f(x) = x^2$.

The function is narrower and is upside down.

a. What is the domain? all real #s, $(-\infty, \infty)$
b. What is the range? $y \leq 0$ $(-\infty, 0]$

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

If a is greater than 1, the function is narrow. If a is less than 1, the function is wider. If a is negative, then the function is upside down.