

1. Describe the transformations of $f(x) = x^2$ for the function below:

$g(x) = -(x+3)^2 + 2$

Vertical Flip
Shifts left 3
Shifts up 2

2. What is the vertex of $g(x) = -(x+3)^2 + 2$?

Vertex = (-3, 2)

3. Write $y = x^2 + 4x + 1$ in vertex form. Complete the Square

$x^2 + 4x + 1$

| | | |
|---|----|---|
| x | 2 | x |
| 2 | 2x | 4 |

$-3 = (x+2)^2 - 3$ Vertex = (-2, -3)

4. Given the following parent functions, match the parent function with its graph.

Parent Functions:

A. Cubic $f(x) = x^3$

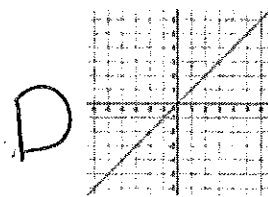
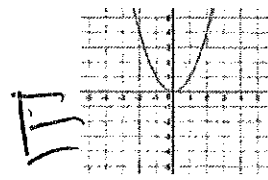
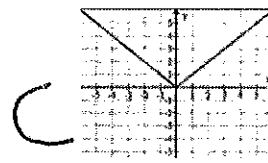
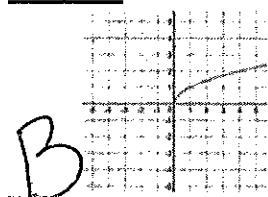
B. Square Root $f(x) = \sqrt{x}$

C. Absolute Value $f(x) = |x|$

D. Linear $f(x) = x$

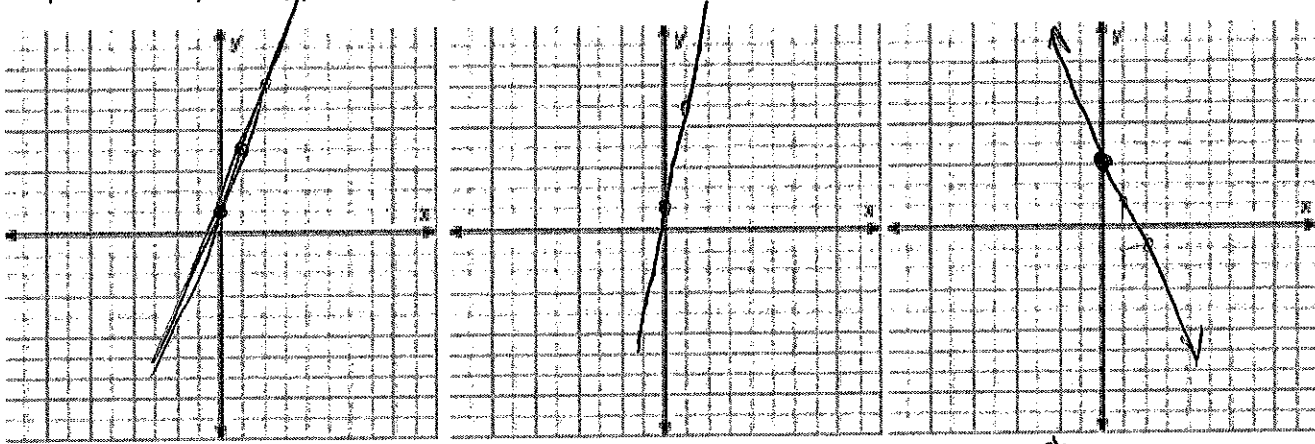
E. Quadratic $f(x) = x^2$

Graphs:



Graphing Linear Functions:

Graph the lines $y = 3x+1$, $y=5x+1$, and $y = -2x+3$ on the axes below.



Describe how, when given an equation in "y=mx+b" form, you can draw an accurate ^{graph} Be specific and detailed.

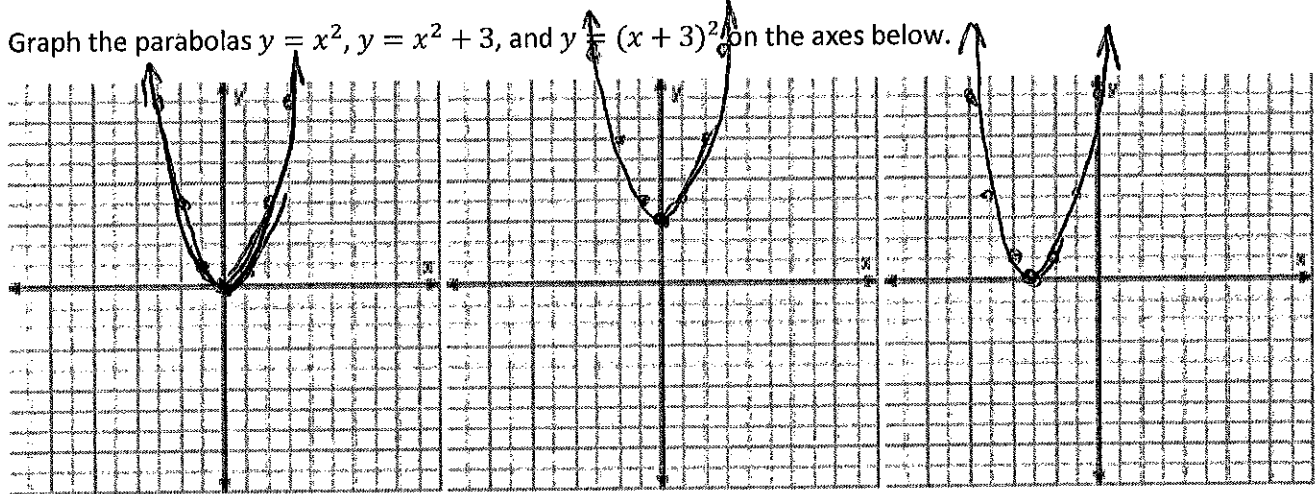
Start with "b", cant up & over by "m!"

What is the difference between a positive and negative slope?

Pos ↗ Neg ↘

Graphing Quadratic Functions:

Graph the parabolas $y = x^2$, $y = x^2 + 3$, and $y = (x + 3)^2$ on the axes below.



Describe what "adding 3" can do to the graph of a parabola. Be specific and detailed. In particular, describe the difference between "adding 3 inside the parentheses" and "adding 3 to the end of the equation."

Adding 3 inside → Shifts left 3
Adding 3 outside → Shifts up 3.