

**Starter** 9 JAN 2019

State the domain and range of each graph.

1) D: L to R  
R: B to TOP

D:  $-6 \leq x < 6$   
R:  $-2 < y \leq 4$

2)

D:  $x \in \mathbb{R}$   
R:  $y \leq 6$

**Objective:** SWBAT graph quadratic functions and analyze various changes to standard form

**Essential Understanding** A quadratic function is a type of nonlinear function that models certain situations where the rate of change is not constant. The graph of a quadratic function is a symmetric curve with a highest or lowest point corresponding to a maximum or minimum value.

Quadratic Function Standard Form:  $y = ax^2 + bx + c$

a and b are coefficient  
a  $\neq 0$  (would be a line)  
if  $a = 0$  constant  
c is the constant

Graphs:

Graph of a quadratic is a Parabola or line

Changing the value of "a" the Parent function

a)  $f(x) = x^2$

b)  $y = 3x^2$   $3(x^2)$

c)  $y = 5x^2$   $5(x^2)$

d)  $y = \frac{1}{2}x^2$   $\frac{1}{2}(-2)^2$

e)  $y = -\frac{1}{2}x^2$   $y = -\frac{1}{2}x^2$

If "a" is positive, parabola opens up

If "a" is negative, parabola opens down

As "a" gets bigger than 1, parabola gets thinner

As "a" gets smaller than 1, parabola gets wider

EXIT TICKET # 1