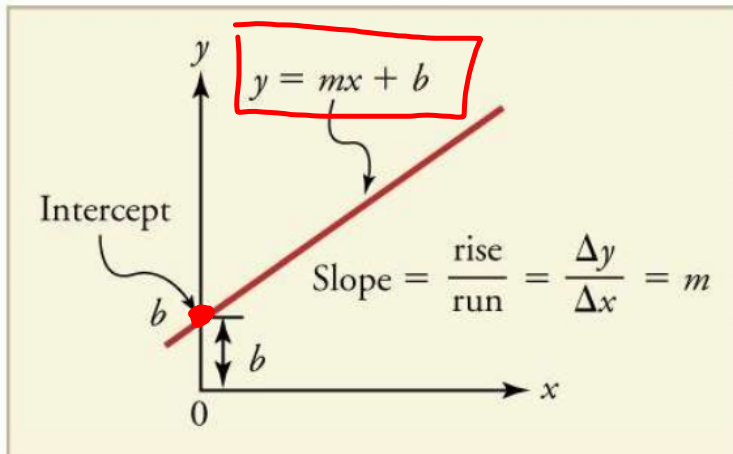


Quadratics are everywhere. The most common example is how things move when they are unpowered. If you throw a ball, fire a cannon, or slingshot and angry bird - that path that the object follows is called a parabola.

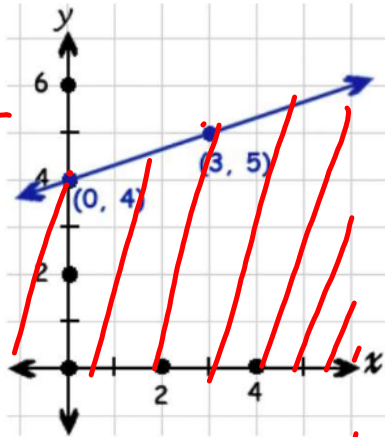
We can already draw lines:



Inequalities are almost the same - except our solutions are more than the line on the graph - they are a side of the graph:

$$y \geq \frac{1}{3}x + 4$$

$$m = \frac{\text{rise}}{\text{run}} = \frac{1}{3}$$

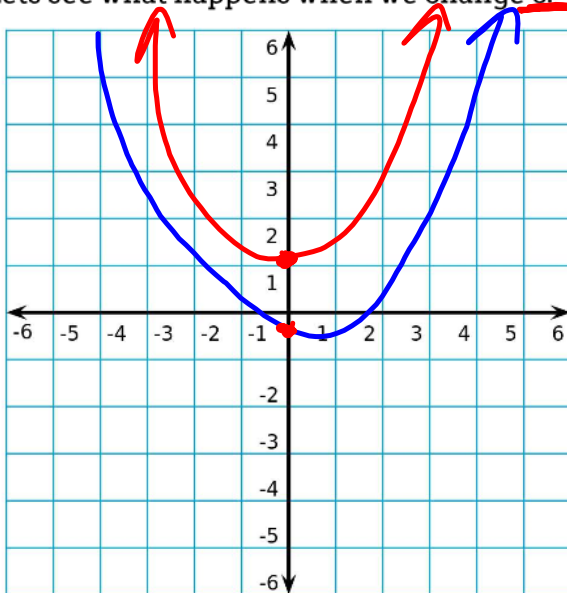


Those linear functions always have degree = 1.
 Quadratics are the next level: degree = 2.

$$y = ax^2 + bx + c$$

- ~~x¹~~
- ~~x²~~
- x³
- x⁴
- x⁵

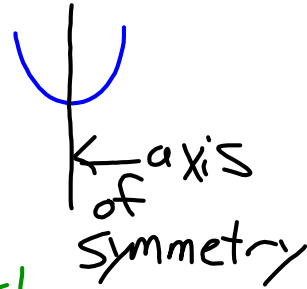
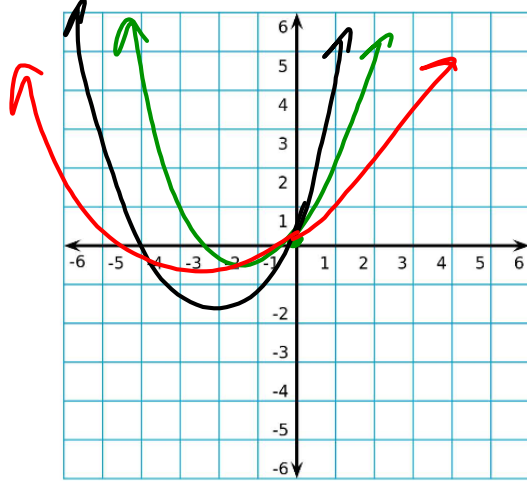
Lets see what happens when we change c:



⇒ y-intercept

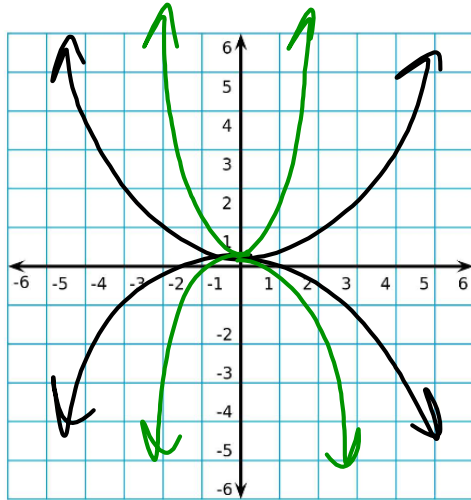
parabolas are symmetrical.

Lets see what happens when we change b:



b → changes the axis of symmetry

Lets see what happens when we change a:



a → 1) up/down
2) stretch/expand

Quadratic → equation

$$y = Ax^2 + Bx + C$$

parabola → shape

A → up/down
stretch/expand tall/skinny

B → axis of symmetry

C → y-intercept

- All Quadratics are of degree 2
- The standard form of a quadratic is:
 - ◆ $y = ax^2 + bx + c$
- Symmetrical
- If a is positive the parabola opens up
 - ◆ If a is negative the parabola opens down
- Changing b, changes the line of symmetry
- Changing c, changes the y-intercept

HW: 360
#1-6