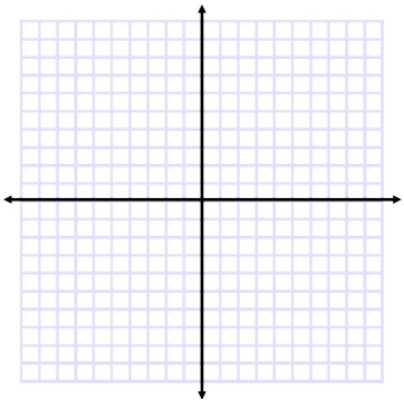
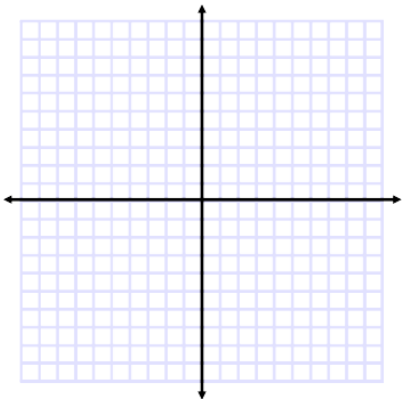
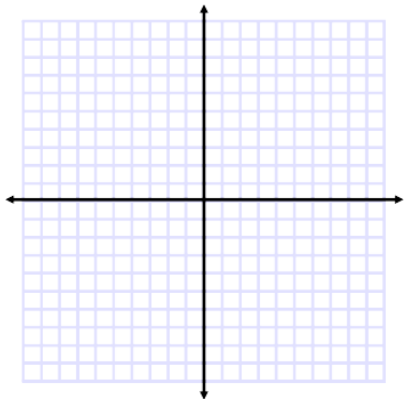
Section 3.5 and 3.6

How many zeros?

How can we discriminate between quadratics with two distinct roots, two equal roots and no real roots using The Quadratic Formula?

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

We use the _____.

Two distinct roots	No real roots	Two equal roots
		
The discriminant is	The discriminant is	The discriminant is

Example: How many roots does each equation have?

$f(x) = -2x^2 + 12x - 18$	$g(x) = 2x^2 + 6x - 8$	$h(x) = x^2 - 4x + 7$

Using a and k

Solving quadratics

We can solve quadratics by:

1.
2.
3.

Anthony owns a business that sells parts for electronic game systems. The profit function for his business can be modelled by the equation $P(x) = -0.5x^2 + 8x - 24$, where x is the quantity sold, in thousands, and $P(x)$ is the profit in thousands of dollars.

How many parts must he sell to break even?

A water balloon is catapulted into the air from the top of a building. The height, $h(t)$, in metres, of the balloon after t seconds is $h(t) = -5t^2 + 30t + 10$.

What are the domain and range of this function?

When will the balloon reach a height of 30 m?