10.1

The Square Root Method

The equation $x^2 = c$ has two solutions:
$x = \sqrt{c}$ or $x = -\sqrt{c}$ if $c > 0$.

(ex) $x^2 = 25$ then $x = \sqrt{25}$ or $x = -\sqrt{25}$
Since $(5)^2 = 25$ and $(-5)^2 = 25$

We can use this to solve some quadratics.

(ex) $x^2 - 9 = 0$
$x^2 = 9$
$x = \pm 3$ Check: $3^2 - 9 = 9 - 9 = 0$ ✓ $(-3)^2 - 9 = 9 - 9 = 0$ ✓

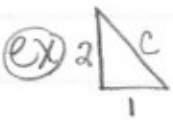
(ex) $2x^2 - 32 = 0$
$2x^2 = 32$
$x^2 = 16$
$x = \pm 4$ Check: $2(4)^2 - 32 = 2 \cdot 16 - 32 = 32 - 32 = 0$ $2(-4)^2 - 32 = 0$ ✓

(ex) $(x+2)^2 - 9 = 0$
$(x+2)^2 = 9$
$x + 2 = 3$ or $x + 2 = -3$
$x = 1$ or $x = -5$ Check: $(1+2)^2 - 9 = 3^2 - 9 = 9 - 9 = 0$ ✓
$(-5+2)^2 - 9 = (-3)^2 - 9 = 9 - 9 = 0$ ✓

Pythagorean Theorem

We've already talked about

$a^2+b^2=c^2$

(ex) 

$1^2+2^2=c^2$

$1+4=c^2$

$\boxed{\sqrt{5}=c}$

The Distance Formula

The distance between (x_1, y_1) and (x_2, y_2) is

$$d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$$

(ex) Find the distance between $(-1,3)$ and $(2,-4)$

$$d=\sqrt{(2--1)^2+(-4-3)^2}$$
$$=\sqrt{(3)^2+(-7)^2}$$
$$=\sqrt{9+49}=\sqrt{58}$$