September 22, 2017

Circle

S.F: $(x-h)^2+(y-k)^2=r^2$

- Center: (h, k)
- Radius: r

General: $x^2+y^2+ax+by+c=0$

Sep 22-10:54 AM

Ways to solve Quadratics

① To factor

$$x^2-x-12=0$$

$$(x-4)(x+3)=0$$

② Use the Square Root Property

- $x^2+9=0$

$$\sqrt{x^2}=\pm\sqrt{-9}$$

$$x=\pm 3i$$

- $(x-2)^2-5=0$

$$\sqrt{(x-2)^2}=\pm\sqrt{5}$$

$$x-2=\pm\sqrt{5}$$

$$x=2\pm\sqrt{5}$$

Sep 22-11:05 AM

③ Completing the Square

④ Quadratic Formula

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

Can be used to solve any quadratic

Sep 22-11:10 AM

Uses of Completing the Square

① solve Quadratics

② Convert equations of circles from general form to standard form.

③ Convert Quadratics from standard form to vertex form

$$(x-h)^2+k=0$$

Sep 22-11:14 AM

$$\frac{ax^2}{a}+\frac{bx}{a}+\frac{c}{a}=\frac{0}{a};$$ Solve for x

$$x^2+\frac{b}{a}x+\frac{c}{a}=0$$

$$-\frac{c}{a} \qquad -\frac{c}{a}$$

$$\boxed{x^2\boxed{+\frac{b}{a}}x}=-\frac{c}{a}$$

ⓐ $\frac{b}{a}\cdot\frac{1}{2}=\frac{b}{2a}$

ⓑ $\left(\frac{b}{2a}\right)^2=\boxed{\frac{b^2}{4a^2}}$ add it to both sides

$$\boxed{x^2+\frac{b}{a}x+\frac{b^2}{4a^2}}=-\frac{c}{a}+\frac{b^2}{4a^2}$$

Perfect Square Trinomial

Discriminate

$$\sqrt{\left(x+\frac{b}{2a}\right)^2}=\pm\sqrt{\frac{b^2-4ac}{4a^2}}$$

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

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

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

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

Sep 22-11:17 AM

Relation: an ordered pair

(x, y)

(a, b)

$(2, -5)$

A function, lets call it "f" maps an element from the set of first entries to one and only one entry from the second set.

Sep 22-11:32 AM

"f"

In $\xrightarrow{\quad}$ $\boxed{3x+4}$ $\xrightarrow{\quad}$ out

x, 2 (Domain)

$f(x)$, 10 (Range)

Sep 22-11:39 AM

Sep 22-11:42 AM