

$$5. (x-h)^2 + (y-k)^2 = r^2$$

$$x^2 + y^2 + 2x + 4y + 1 = 0$$

Group

$$x^2 + 2x + y^2 + 4y = -1$$

Complete the square

$$\frac{2}{2}$$

$$x^2 + 2x + 1 + y^2 + 4y + 4 = -1 + 1 + 4$$

$$(x+1)(x+1) + (y+2)(y+2)$$

$$(x+1)^2 + (y+2)^2 = 4$$

$$(x-h)^2 + (y-k)^2 = r^2$$

Center $(-1, -2)$

Radius 2

$$7. \quad 3x^2 = 4x - 2$$

Set = 0

$$3x^2 - 4x + 2 = 0$$

$$\sqrt{x^2} = \sqrt{25}$$

$$x = \pm 5$$

Factor
Complete the Square
Quadratic Formula

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

$$3x^2 - 4x + 2 = 0$$

$$a = 3$$

$$b = -4$$

$$c = 2$$

$$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(3)(2)}}{2(3)}$$

$$x = \frac{4 \pm \sqrt{16 - 24}}{6}$$

$$x = \frac{4 \pm \sqrt{-8}}{6}$$

$$i = \sqrt{-1}$$

$$x = \frac{4 \pm 2i\sqrt{2}}{6}$$

$$x = \frac{2 \pm i\sqrt{2}}{3}$$

$$x = \frac{2}{3} \pm \frac{i\sqrt{2}}{3}$$

$$9. \quad x^3 + 3x^2 - 5x = 0$$

$$x(x^2 + 3x - 5) = 0$$

$$x = 0 \quad x = -4.19 \quad x = 1.19$$

$$11. \quad |x^2 - 2x| = 3x - 6$$

$$x^2 - 2x = 3x - 6 \text{ OR } x^2 - 2x = -3x + 6$$

$$\overbrace{(6\sqrt{x-2})(6\sqrt{x-2})}$$

$$36(x-2)$$

$$36x - 72$$

$$28. \frac{2|3-x|}{2} > \frac{8}{2}$$

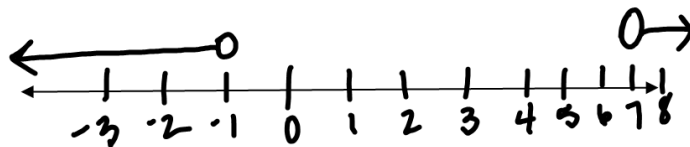
Abs. value
= or
> or
< and

$$|3-x| > 4$$

$$3-x > 4 \quad \text{or} \quad 3-x < -4$$

$$\frac{-x}{-1} > \frac{1}{-1} \quad \text{or} \quad \frac{-x}{-1} < \frac{-7}{-1}$$

$$x < -1 \quad \text{or} \quad x > 7$$



$$|3-x| < 4 \quad \text{and}$$

$$\rightarrow -4 < 3-x < 4$$

$$3-x < 4 \quad \text{and} \quad 3-x > -4$$

$$-x < 1 \quad \text{and} \quad -x > -7$$

$$x > -1 \quad \text{and} \quad x < 7$$

$$-1 < x < 7$$

$$21. (fg)(2)$$

$$(2x-5)(x^2+2)$$

$$2x^3 + 4x - 5x^2 - 10$$

$$2x^3 - 5x^2 + 4x - 10$$

$$2(2)^3 - 5(2)^2 + 4(2) - 10$$

$$16 - 20 + 8 - 10$$

$$-6$$

15. Annual
 $t=1$
 $I = Prt$

$$x + y = 15,000$$

$$.0925x + .115y = 1623.75$$

$$\left[\begin{array}{cc|c} 1 & 1 & 15000 \\ .0925 & .115 & 1623.75 \end{array} \right] \text{ rref}$$

$$y = -x + 15,000$$

$$.0925x + .115(-x + 15,000) = 1623.75$$

$$.0925x + -.115x - 1725 = 1623.75$$

$$-.0225x = -101.25$$

$$x = 4500$$

$$16. (1990, 2800)$$

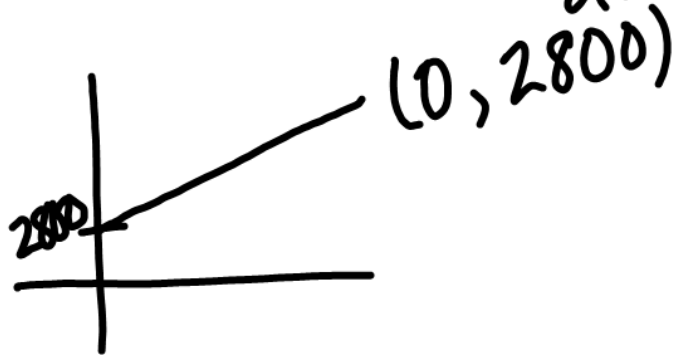
$$(1998, 12,600)$$

$$m = \frac{12,600 - 2,800}{1998 - 1990}$$

$$m = \frac{9800}{8}$$

$$m = 1225$$

1990 $\rightarrow t=0$
2800



$$E = 1225t + 2800$$

$$17. A = Pe^{rt}$$

$$12000 = 4000 e^{r(15)}$$

$$\text{for } 3 = \ln e^{15r}$$

$$1.0986 = 15r$$

$$.073 = r$$

$$7.3\%$$

$$18. \quad \begin{array}{l} x_{\min} - 10 \\ \text{max} 1000 \\ 50 \end{array} \quad \begin{array}{l} y - 100 \\ 30,000 \\ 5000 \end{array}$$

2nd
Calc
Mode

$$(475, 22,562.5)$$

x y

$$34. \quad g(x) = 4x - 3$$

$$y = \quad y = 4x - 3$$

reverse
x's y
Solve for
y

$$x = 4y - 3$$

$$x + 3 = 4y$$

$$\frac{x + 3}{4} = y$$