Solve $3.2x^2 - 7.1x - 2.5 = 0$

$a = 3.2,\ b = -7.1,\ c = -2.5$

Discriminant $b^2 - 4ac = (-7.1)^2 + 4(3.2)(+2.5)$

$=$

write much Think little.

$7.1 \wedge 2 + 4 * 3.2 * 2.5 = 82.41$

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a} = \frac{-(-7.1) \pm \sqrt{82.41}}{2(3.2)}$$

$$= \frac{7.1 \pm \sqrt{82.41}}{6.4} =$$

Get a TI30II

$$\frac{7.1 + \sqrt{82.41}}{6.4} \qquad \frac{7.1 - \sqrt{82.41}}{6.4}$$

etc.

2.5278117770982956292137714253857

$(7.1 + \sqrt{\ }(82.41))/6.4$

$|2x-3| > -5$

$\mathbb{R}$

$\underbrace{|2x-3| >}_{\to \text{OR}} 5$

$2x-3 > 5$ OR $2x-3 < -5$

$|2x-3| < -5$

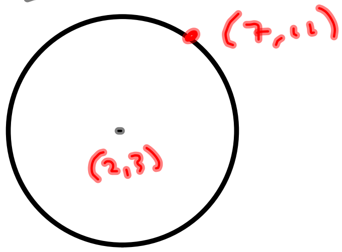
$\varnothing$

$\underbrace{|2x-3| <}_{\to \text{AND}} 5$

$2x-3 < 5$ AND $2x-3 > -5$

Equation of the circle with (x, y) center $(2,3) = (2,3)$ and point $(7, 11)$.

Standard Form $\quad (x-h)^2 + (y-k)^2 = r^2$



$$r = \sqrt{(7-2)^2 + (11-3)^2}$$
$$= \sqrt{5^2 + 8^2}$$
$$= \sqrt{25+64}$$
$$= \sqrt{89}$$

$$\boxed{(x-2)^2 + (y-3)^2 = 89}$$

Solve by completing the square.

$3x^2 + 2x - 7 = 0$

Bonus.

$x^2 + \frac{2}{3}x = \frac{7}{3}$

$\left(\frac{1}{3}\right)^2 = \frac{1^2}{3^2} = \frac{1}{9}$

$x^2 + \frac{2}{3}x + \left(\frac{1}{3}\right)^2 = \frac{7}{3} + \frac{1}{9} = \frac{21+1}{9} = \frac{22}{9}$

$\sqrt{\left(x + \frac{1}{3}\right)^2} = \sqrt{\frac{22}{9}}$

$x + \frac{1}{3} = \pm\sqrt{\frac{22}{9}} = \pm\frac{\sqrt{22}}{\sqrt{9}} = \pm\frac{\sqrt{22}}{3}$

$\boxed{x = -\frac{1}{3} \pm \frac{\sqrt{22}}{3}}$ $\left\{-\frac{1}{3} \pm \frac{\sqrt{22}}{3}\right\}$

$x^2 + 5x = 11$

$x^2 + 5x + \left(\frac{5}{2}\right)^2 = 11 + \frac{25}{4}$

$\left(x + \frac{5}{2}\right)^2 = \frac{69}{4}$

Line thru $(2,3)$ & $(7,11)$
(x_1, y_1) (x_2, y_2)

$y - y_1 = m(x - x_1)$

$\left(\frac{8}{5}\right)\left(\frac{2}{1}\right) = \frac{16}{5}$

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{11-3}{7-2} = \frac{8}{5}$

$y = m(x - x_1) + y_1$ My version of point slope

$\boxed{y = \frac{8}{5}(x-2) + 3}$ Point-Slope

$y = m(x - x_1) + y_1$

$= \frac{8}{5}x - \frac{16}{5} + 3 \cdot \frac{5}{5}$

$= \frac{8}{5}x - \frac{16}{5} + \frac{15}{5}$

$\boxed{y = \frac{8}{5}x - \frac{1}{5}}$ Slope-Intercept

$y = mx + b$

$5y = 8x - 1$

$\boxed{-8x + 5y = -1}$ General Form.

$Ax + By = C$

Nate sez this → $8x - 5y = 1$ for the litigators

It's in the fine print.

$x^2 - 6x - 40 = 0$

1 Solve by factoring:
2 " " quadratic formula:
3 " " completing the square

1

$(x+4)(x-10) = 0$

$x+4 = 0$ OR $x - 10 = 0$

$x = -4$ OR $x = 10$

we cheated:
use quadratic formula to find roots.
Use roots to find factors.

2 $a = 1,\ b = -6,\ c = -40$

$b^2 - 4ac = (-6)^2 - 4(1)(-40)$

$= 36 + 160$

$= 196 = 14^2 \Rightarrow$ It factors

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a} = \frac{6 \pm \sqrt{196}}{2(1)} = \frac{6 \pm 14}{2}$$

10, -4

$x = -4, 10 \Longrightarrow$

$(x+4)(x-10) = x^2 - 6x - 40$

FACTOR Theorem. Chapter 3.

3 $x^2 - 6x - 40 = 0$

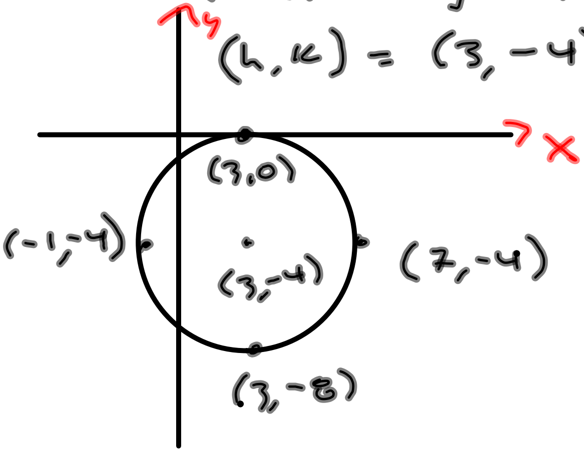
Graph the circle

$$x^2+y^2-6x+8y=-9$$

$$x^2-6x+3^2+y^2+8y+4^2=-9+9+16$$

$$(x-3)^2+(y+4)^2=16$$

$(h,k)=(3,-4)$, $r=4$



Sep 2-8:45 AM

$$\frac{4}{x-1} - \frac{9}{x+1} = \frac{3}{\underset{(x-1)(x+1)}{x^2-1}}$$

LCD = $(x-1)(x+1)$

Method 1

$$(x-1)(x+1)\cdot\frac{4}{x-1} - (x-1)(x+1)\cdot\frac{9}{x+1} = (x-1)(x+1)\cdot\frac{3}{(x-1)(x+1)}$$

$$4(x+1) - 9(x-1) = 3 \quad *$$

$$4x+4-9x+9=3$$

$$-5x+13=3$$

$$-5x=-10$$

$$x=2$$

Method 2 Slower but more versatile.

$$\frac{4}{x-1} - \frac{9}{x+1} = \frac{3}{\underset{(x-1)(x+1)}{x^2-1}}$$

LCD = $(x-1)(x+1)$

$$\left(\frac{4}{(x-1)}\right)\frac{(x+1)}{(x+1)} - \left(\frac{9}{x+1}\right)\left(\frac{x-1}{x-1}\right) = \frac{3}{(x-1)(x+1)}$$

$$\frac{4x+4}{LCD} - \frac{9(x-1)}{LCD} = \frac{3}{LCD}$$

All ones LCD.
Ditch LCD.

$$4x+4-9x+9=3$$