Mondays 2 - 3 p.m. BH 131
Thursdays 7 - 8 p.m. BH 106

Office Hours in WSTV 660
T 2 - 3 p.m.
R 8 - 9 a.m.

This Thursday - Test Prep Review - 3:10-5:00 p.m. BH 129

$$\frac{3}{98} - \frac{7}{20} + \frac{7}{18}$$

LCD =

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31

$$\begin{array}{r|l} 2 & 20 \\ 2 & 10 \\ & 5 \end{array} \qquad \begin{array}{r|l} 2 & 98 \\ 7 & 49 \\ & 7 \end{array}$$

$$\begin{array}{r|l} 2 & 18 \\ 3 & 9 \\ & 3 \end{array}$$

$$\left.\begin{array}{l} 98 = 2 \cdot 7 \cdot 7 \\ 20 = \underline{2 \cdot 2} \cdot 5 \\ 18 = 2 \cdot 3 \cdot 3 \end{array}\right\} \text{LCD} = 2 \cdot 2 \cdot 3 \cdot 3 \cdot 5 \cdot 7 \cdot 7$$

Least common denominator.

Solve the following equations. For each equation, state whether it is conditional, identity or inconsistent.

$$\frac{3}{x-2}+\frac{4}{x+2}=\frac{7x-2}{x^2-4}$$

$(x-2)(x+2)$

LCD $= (x-2)(x+2)$

Phillip

$$(x-2)(x+2)\left(\frac{3}{x-2}\right)+(x-2)(x+2)\left(\frac{4}{x+2}\right)=(x-2)(x+2)\left(\frac{7x-2}{(x-2)(x+2)}\right)$$

$$\cancel{(x-2)}(x+2)\left(\frac{3}{\cancel{x-2}}\right)+(x-2)\cancel{(x+2)}\left(\frac{4}{\cancel{x+2}}\right)=\cancel{(x-2)}\cancel{(x+2)}\left(\frac{7x-2}{\cancel{(x-2)}\cancel{(x+2)}}\right)$$

$$(x+2)(3)+(x-2)(4)=7x-2$$

$$3x+6+4x-8=7x-2$$

$$7x-2=7x-2$$

$$0=0$$

IDENTITY

Solution Set is $(-\infty,\infty)$, except for $x=2$ & $x=-2$:

$$\{x \mid x\neq 2 \text{ and } x\neq -2\}$$

$$=(-\infty,-2)\cup(-2,2)\cup(2,\infty)$$

1. The old combine can harvest the crop in 72 hours, but a new one can do it in 48 hours. How many hours will it take the two of them operating at the same time to harvest the crop?

Let x = the time it takes to harvest the crop working as a team. (in hrs)

Write an equation describing how much of the job is finished in ONE HOUR.

$$\frac{1}{72} + \frac{1}{48} = \frac{1}{x}$$ The 099 approach.

Let x = the time it will take the 1st combine to get the job done, working with the 2nd combine. (hours)

Write an equation that describes how ONE JOB is DONE

$$\frac{1}{72}x + \frac{1}{48}x = 1$$ Same deal.

This is more flexible for when they start at different times.

1. Find the distance between (-1,1) and (7, 5).
2. What is the midpoint of the line segment joining (-1,1) and (7, 5)?

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

$(2-3)^2 = (-1)^2 = 1$

$(3-2)^2 = 1^2 = 1$

$(x_1, y_1) = (-1, 1)$, $(x_2, y_2) = (7, 5)$

$$d = \sqrt{(-1-7)^2 + (1-5)^2}$$

$$= \sqrt{(-8)^2 + (-4)^2}$$

$$= \sqrt{64 + 16}$$

$$= \sqrt{100}$$

$$= \boxed{10 = d}$$

No!

No!

$$\begin{array}{r|l} 2 & 80 \\ 2 & 40 \\ 2 & 20 \\ 2 & 10 \\ & 5 \end{array}$$

Brian Reinert

Fix:

$\sqrt{80}$

$$= \sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 5}$$

$$= 2 \cdot 2 \sqrt{5}$$

$$= 4\sqrt{5}$$

$$\sqrt{80} = \sqrt[2]{2^4 \cdot 5} = 2^{\frac{4}{2}}\sqrt{5}$$

$$= 2^2\sqrt{5}$$

$$= 4\sqrt{5}$$

1. Determine the center and radius of each circle:

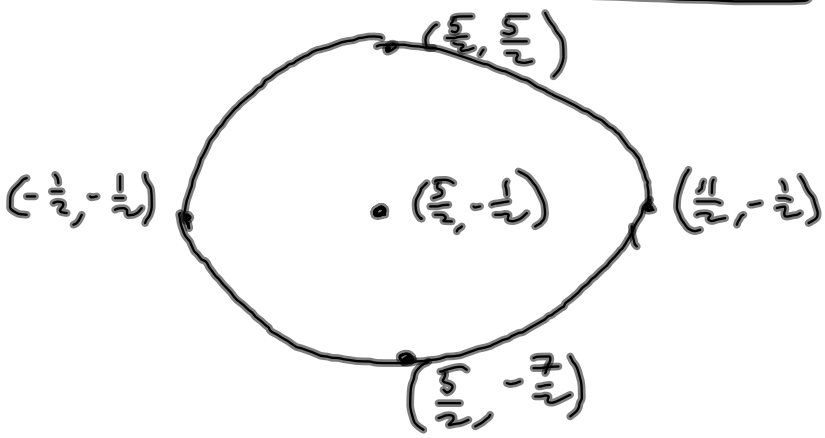
$$x^2 - 5x + y^2 + y = \frac{5}{2}$$

$$\frac{10 + 25 + 1}{4} = \frac{36}{4} = 9$$

$$\underbrace{x^2 - 5x + \left(\frac{5}{2}\right)^2}\ + y^2 + 1y + \left(\frac{1}{2}\right)^2 = \frac{5}{2} + \frac{25}{4} + \frac{1}{4}$$

$$\left(x - \frac{5}{2}\right)^2 + \left(y + \frac{1}{2}\right)^2 = 9 = 3^2$$

$$\boxed{(h, k) = \left(\frac{5}{2}, -\frac{1}{2}\right), \quad r = 3}$$



1. Find the equation of each line from the information given. Give me three versions of each line: Standard Form (with integer coefficients), Slope-Intercept Form, Point-Slope Form.
a. Has slope of 5 and contains the point (3, 1)
b. Contains the points (- 1, 1) and (3, 4).
c. Contains the points (2, 3) and (2, 5).
d. Contains the points (2, 3) and (7, 3)

(a) $y - y_1 = m(x - x_1)$ $\qquad y = m(x - x_1) + y_1$

$m = 5,\ (x_1, y_1) = (3, 1)$

pt-slope $y - 1 = 5(x - 3)$

$y - 1 = 5x - 15$

slope-int. $y = 5x - 14$ $\qquad y = mx + b$ $\qquad$ Cassandra

standard: $-5x + y = -14$ $\qquad Ax + By = C$

$(-1,1)$ & $(3,4)$

(x_1,y_1) (x_2,y_2)

$$m = \frac{y_2-y_1}{x_2-x_1} = \frac{4-1}{3-(-1)} = \frac{3}{4}$$

My version of point-slope:

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

$$\boxed{y = \frac{3}{4}(x-(-1))+1}$$

$$= \frac{3}{4}x + \frac{3}{4} + 1$$

$$\boxed{y = \frac{3}{4}x + \frac{7}{4}}$$

$$-\frac{3}{4}x + y = \frac{7}{4}$$

$$4\left(-\frac{3}{4}\right)x + 4y = 4\left(\frac{7}{4}\right)$$

Clear fractions

(Want INTEGER coefficients)

$$\boxed{-3x + 4y = 7}$$

1. Find an equation of the line that is parallel to $y = -\frac{2}{5}x - 7$ that passes through (1, 2).

2. Find an equation of the line that is perpendicular to $y = -\frac{2}{5}x - 7$ that passes through (1, 2).

1. Find all real or non-real solutions of the following quadratic equations in 2 different ways (completing the square and quadratic formula). Simplify all radicals and write in the lowest/simplest terms possible.

$$3x^2+2x+1=0$$

problem with him
Divide by the coefficient of x^2 :

$$x^2+6x+1=0$$

$$x^2+\frac{2}{3}x+\frac{1}{3}=0$$

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

$x=$

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

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

$$x+\frac{1}{3}=\pm\sqrt{-\frac{2}{9}}=\pm i\sqrt{\frac{2}{9}}$$

$$=\pm i\frac{\sqrt{2}}{\sqrt{9}}=\pm i\frac{\sqrt{2}}{3}$$

$$x+\frac{1}{3}=\pm i\frac{\sqrt{2}}{3}$$

$$\boxed{x=-\frac{1}{3}\pm i\frac{\sqrt{2}}{3}}=\boxed{\frac{-1\pm i\sqrt{2}}{3}=x}$$

Nice Style.

$3x^2 + 2x + 1 = 0$

$x = \frac{-b \pm \sqrt{\quad}}{2a}$

$b^2 - 4ac$ = Discriminant

.. > 0 2 real solutions.

.. $= 0$ 1 real (repeated) solution.

.. < 0 2 nonreal solutions.

1. State the value of the discriminant for each of the following, and the number of real solutions:

$x^2 + 6x + 1 = 0$

$3x^2 + 2x + 1 = 0$

$x^2 - 10x + 25$

1. Solve the following inequalities:

$-1-4x \geq 7$

$5 > 8 - x$ and $1 + \frac{1}{2}x < 4$

$|9y+1| < 5$

$5 \leq 8 - x$ or $1 + \frac{1}{2}x < 4$

$|9y+1| < -5$

$5 \leq 8 - x$ and $1 + \frac{1}{2}x \geq 4$

$|9y+1| > 5$

$|9y+1| \geq -5$

$|9y+1| - 10 \geq -5$