

HW-Tally →

Pick Up the
Warm Up

and the Ch. 3 Test
information sheet.

1 Use "Completing the Square" to solve the two quadratic equations

a) $x^2 + 14x - 15 = 0$

$$x^2 + 14x + 49 = 15 + 49$$

$$\sqrt{(x+7)^2} = \sqrt{64}$$

$$x+7 = \pm 8$$

$$x+7=8$$

$$\rightarrow -7$$

$$x+7=-8$$

$$\rightarrow -7$$

$$\left(\frac{14}{2}\right)^2 = 49$$

Solution

$$x=1$$

$$x=-15$$

b) Now, a bit tougher!
Keep all values exact, no decimals.

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

$$x^2 + 3x + \frac{9}{4} = 5 + \frac{9}{4}$$

$$\sqrt{\left(x + \frac{3}{2}\right)^2} = \sqrt{\frac{29}{4}}$$

$$x + \frac{3}{2} = \pm \frac{\sqrt{29}}{2}$$

$$x + \frac{3}{2} = \frac{\sqrt{29}}{2}$$

$$x + \frac{3}{2} = -\frac{\sqrt{29}}{2}$$

$$x = -\frac{3}{2} + \frac{\sqrt{29}}{2}$$

$$x = -\frac{3}{2} - \frac{\sqrt{29}}{2}$$

$$\frac{5}{4} + \frac{9}{4}$$

$$\frac{20}{4} + \frac{9}{4} = \frac{29}{4}$$

$$\left(\frac{3}{2}\right)^2 = \frac{9}{4}$$

$$\frac{\sqrt{29}}{\sqrt{4}}$$

$$x = \frac{-3 + \sqrt{29}}{2}$$

$$x = \frac{-3 - \sqrt{29}}{2}$$

2 Divide the Fractions

$$a) \frac{\frac{3}{2y}}{\frac{x}{4y}} = \frac{3}{2y} \cdot \frac{4y}{x} = \frac{4y}{x}$$

$$b) \frac{3}{1 - \frac{1}{2y}} = \frac{3}{\frac{2y-1}{2y}} = \frac{3}{1} \cdot \frac{2y}{2y-1} = \frac{6y}{2y-1}$$

called a
complex
fraction ↗

wait for instructions

(7)

Some equations have rational expressions built into them, that does not mean you have to add or subtract the expressions, however.

Option 1

Solve just by clearing out the fractions in one step

$$\frac{1}{m(m-1)} + \frac{1}{m} = \frac{5}{m(m-1)}$$

Option 2

You can add the rational expressions but you must show your work appropriately.

$$\frac{1}{m(m-1)} + \frac{1}{m} = \frac{5}{m(m-1)}$$

Option 1

Solve just by clearing out the fractions in one step

$$\frac{1 \cancel{m(m-1)}}{m(m-1)} + \frac{1 \cancel{m(m-1)}}{m} = \frac{5 \cancel{m(m-1)}}{m(m-1)}$$

multiply all + by $m(m-1)$

$$1 + m - 1 = 5$$

$$m = 5$$

Option 2

You can add the rational expressions but you must show your work appropriately.

$$\frac{1}{m(m-1)} + \frac{1(m-1)}{m(m-1)} = \frac{5}{m(m-1)}$$

$$\frac{1 + m - 1}{m(m-1)} = \frac{5}{m(m-1)}$$

$$\frac{m \cancel{m(m-1)}}{m \cancel{m(m-1)}} = \frac{5 \cancel{m(m-1)}}{m \cancel{m(m-1)}}$$

$$m = 5$$

Check work from HW
(Any questions?)

$$\begin{aligned} \underline{113b} \quad & \frac{x^2 - x - 12}{3x^2 - 11x - 4} \cdot \frac{3x^2 - 20x - 7}{x^2 - 9} \\ & = \frac{(x+3)(x-4)}{(3x+1)(x-4)} \cdot \frac{(3x+1)(x-7)}{(x+3)(x-3)} \end{aligned}$$

113 c

$$\frac{x^2 + 8x - 10}{2x^2 + 15x + 25} \div \frac{4x^2 + 20x - 24}{2x^2 + x - 10}$$

Issues if
you don't
factor out
2 first

Issues if you
don't factor out
4 first

$$\frac{2(x^2 + 4x - 5)}{(2x+5)(x+5)} \div \frac{4(x^2 + 5x - 6)}{(2x+5)(x-2)} = \frac{2(x+5)(x-1)}{(2x+5)(x+5)} \div \frac{4(x-2)(x-3)}{(2x+5)(x-2)}$$

$$\frac{2(x^2 + 4x - 5)}{(2x+5)(x+5)} \div \frac{4(x^2 + 5x - 6)}{(2x+5)(x-2)} = \frac{2(x+5)(x-1)}{(2x+5)(x+5)} \div \frac{4(x-2)(x-3)}{(2x+5)(x-2)}$$

$$\frac{1 \cancel{2}}{\cancel{2x+5}} \div \frac{\cancel{2x+5}}{\cancel{2x+5}(x-3)} = \frac{1}{2(x-3)}$$

$$\boxed{113 \text{ d}} \quad \frac{7}{x+5} - \frac{4-6x}{x^2+10x+25} \Rightarrow \frac{7}{x+5} - \frac{2(2-3x)}{(x+5)(x+5)}$$

$$\frac{7(x+5)}{(x+5)(x+5)} - \frac{2(2-3x)}{(x+5)(x+5)} \Rightarrow \frac{7(x+5) - 2(2-3x)}{(x+5)(x+5)}$$

$$\frac{7x+35 = 4+3x}{(x+5)(x+5)} \Rightarrow \frac{10x+31}{(x+5)(x+5)}$$

$$\boxed{117} \quad x^2 + 14x + 33 = 0$$

$$(x+11)(x+3) = 0$$

$$\downarrow \quad \downarrow$$

See your
LCQ

$$\frac{3a^2 - 3b^2}{b-a}$$

$$\frac{2}{x} + \frac{x+1}{5x}$$

+

$$\frac{x}{3x+9} - \frac{3}{x^2+3x}$$

$$\frac{x}{3(x+3)} - \frac{3}{x(x+3)}$$

$$\frac{-}{3 \cdot x \cdot (x+3)}$$

Today's
AIM

Become proficient with
adding, subtracting,
multiplying, and dividing
rational expressions.

1. Factor everything first.
2. Then simplify.

$$\frac{2x}{4x^2-2x} \rightarrow \frac{2x}{2x(x-1)} \rightarrow \frac{1}{2x-1}$$

Practice Worksheet

- Check answers often
 - Be organized
 - Don't skimp on good notation
 - Factor **ASAP**
 - Do box/diamond work on scratch paper

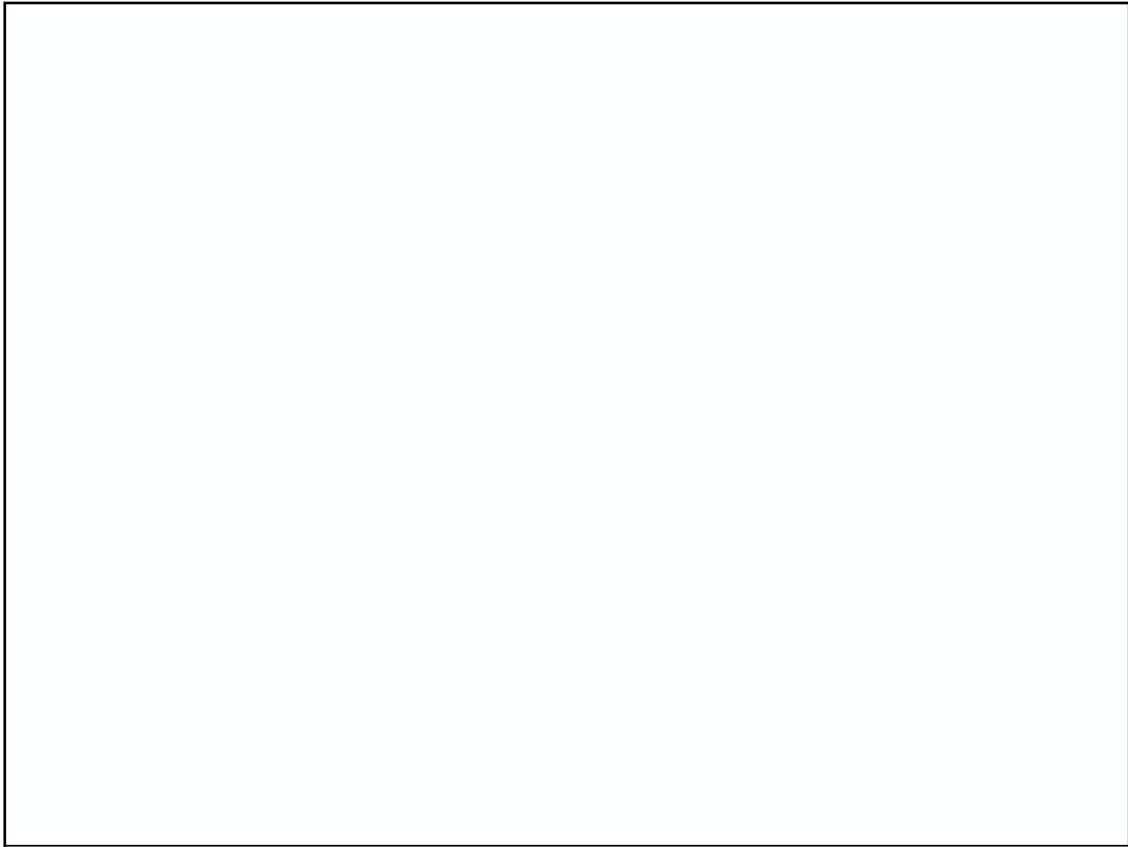
Answers :

$$\textcircled{1} \quad \frac{1}{2x-1} \quad \text{but} \quad x \neq 0 \quad x \neq \frac{1}{2}$$

$$\textcircled{2} \quad z-7 \quad \text{but} \quad z \neq -7$$

$$\textcircled{3} \quad \frac{2}{x+5} \quad \text{but} \quad x \neq -5$$

$$\textcircled{4} \quad \frac{7}{15n^2}$$



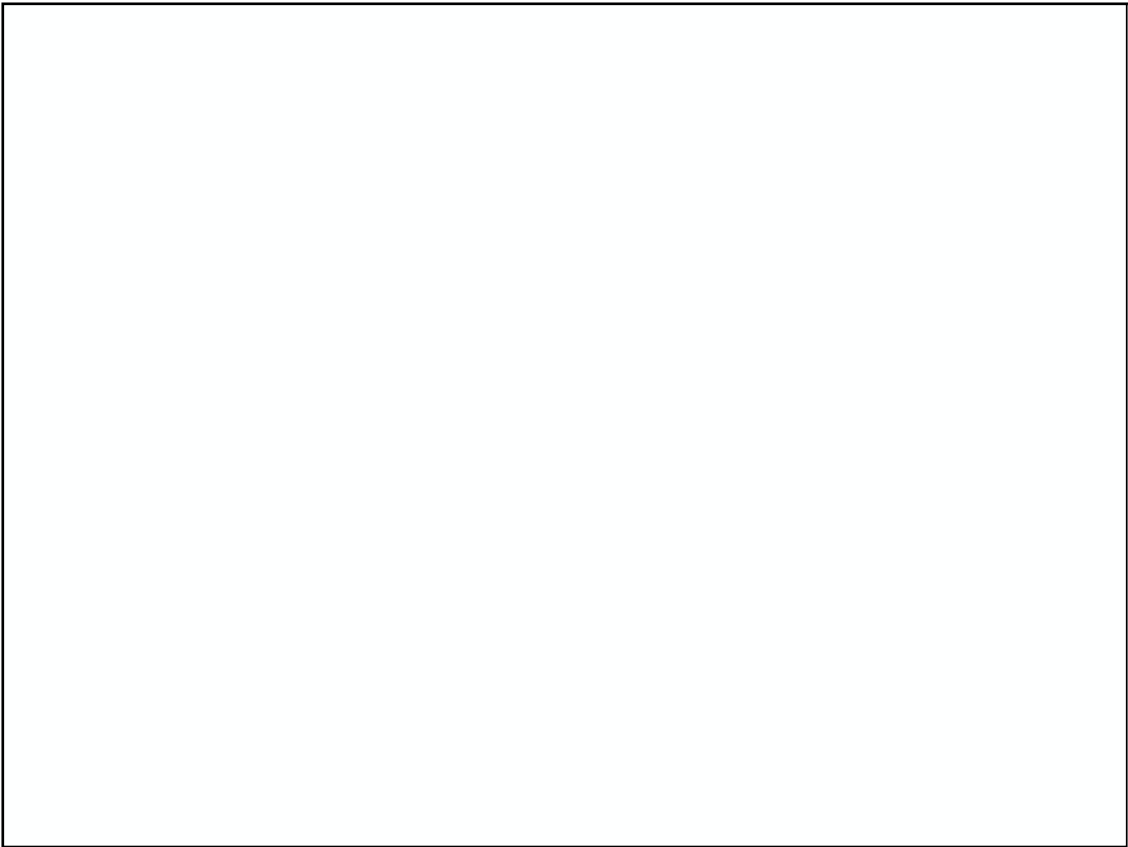
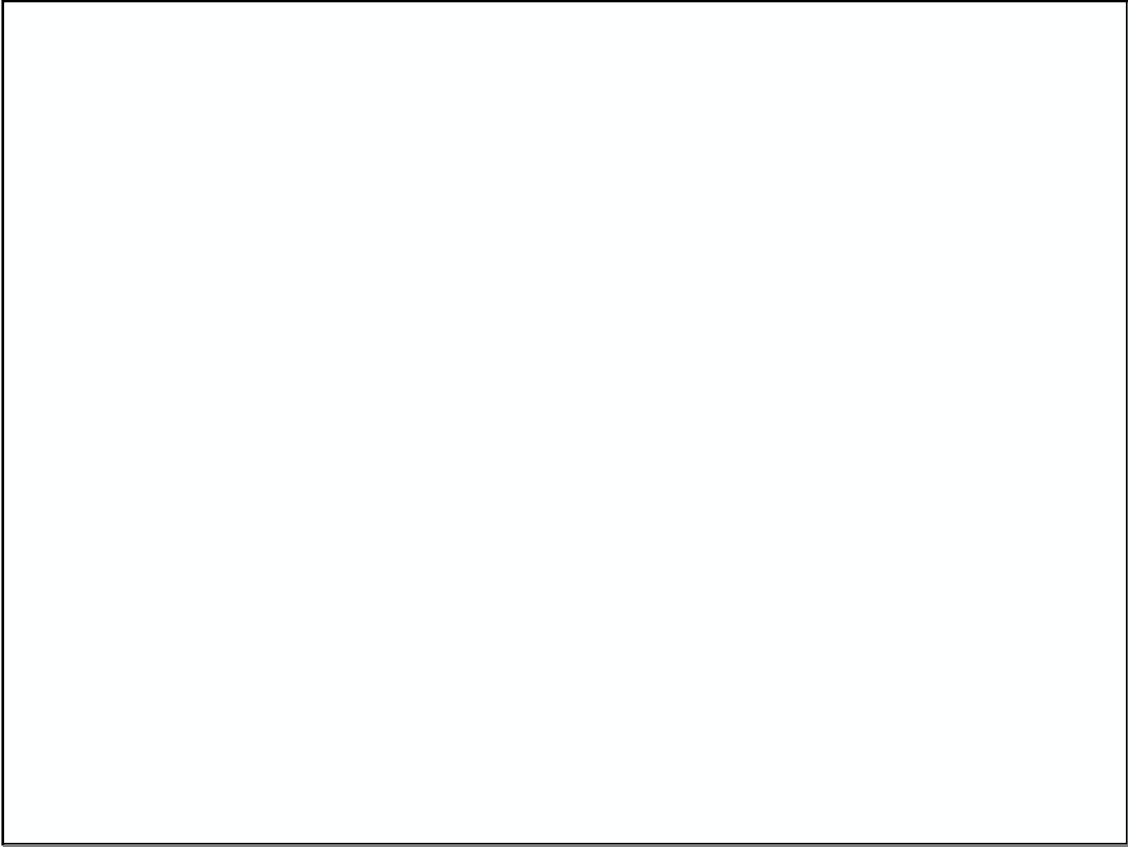
$$\textcircled{4} \quad \frac{7}{15n^2}$$

$$\textcircled{5} \quad \frac{4(x+6)}{3(3x+8)} \quad \text{or} \quad \frac{4x+24}{9x+24}$$

$$\textcircled{6} \quad \frac{5(x+y)}{3}$$

$$\textcircled{7} \quad \frac{3n^2 + 30}{20n}$$

$$\textcircled{8} \quad \frac{3x-8}{4x^2}$$



⑧

$$\frac{3x-8}{4x^2}$$

⑨

$$\frac{2m^2-5m-3}{(2m+1)^2}$$

← can't be factored

⑩

$$\frac{2x+3}{(x-5)(x+2)}$$

B.B.

Assignment

3 120-121, 123-126, **CL-162**

(3) Cylinder



$$V = \pi r^2 h$$

$$SA = 2\pi r^2 + 2\pi r h$$

Volume to Surface Area Ratio :

$$\frac{V}{SA} =$$

