

Pick Up the
WARM
UP

QUESTIONS on
HW



Hint: Look for opportunities to factor - look for common factors
- Difference of squares
- factor trinomials into (x)

$$\textcircled{1} \frac{\cancel{3}(x-\cancel{5})(5x+1)}{\cancel{5} \cdot \cancel{15}(x-\cancel{5})} \rightarrow$$

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

$$5x+5$$

$$5(x+1)$$

$$\textcircled{2} \frac{-\cancel{7} \cancel{70} x (y-\cancel{1})}{\cancel{10} \cancel{100} x^{\cancel{2}} (y-\cancel{1})^{\cancel{5} 4}} \rightarrow$$

$$-\frac{7}{10(y-1)^4}$$

\uparrow
 x^2

$$\textcircled{3} \frac{\cancel{8} \cancel{16} (x^2-4) y^{\cancel{5} 1}}{\cancel{7} \cancel{14} (x+2) y^{\cancel{4} 1}} \rightarrow$$

$$\frac{(x+2)(x-2)y}{x+2}$$

$$\boxed{\frac{8y(x-2)}{7}}$$

$$\textcircled{4} \quad \frac{n^2-16}{4n-12} \xrightarrow{\text{Dcs}} \frac{(n+4)(n-4)}{4(n-3)}$$

$$\textcircled{5} \quad \frac{x^2+2x}{2x+8} \rightarrow \frac{x(x+2)}{2(x+4)}$$

$$10-2$$

$$-(2-10)$$

$$\textcircled{6} \quad \frac{a-b}{b-a} \rightarrow \frac{\cancel{a-b}}{-\cancel{(a-b)}} = \boxed{-1}$$

Ⓢ Analyze the function $y = \frac{(2x-4)}{(x-4)(x-2)}$

$(x-4)(x-2) = 0$
 $x=4$ $x=2$

sketch the graph
 - include holes (if any)
 - include dashed lines for asymptotes (if any)

needs double brackets

discontinuities
 hole at $x=2$
 VA at $x=4$

Questions on HW?

78

a

$$\frac{x^2 - 8x + 16}{3x^2 - 10x - 8} = \frac{(\quad)(\quad)}{(\quad)(\quad)}$$

x^2	
x	16

~~$$\begin{array}{l} 16x^2 \\ -8x \end{array}$$~~

$3x^2$	
	-8

~~$$\begin{array}{l} 10x^2 \\ -8 \end{array}$$~~

78

a

$$\frac{x^2 - 8x + 16}{3x^2 - 10x - 8} = \frac{(x-4)(x-4)}{(3x+2)(x-4)}$$

x^2	
x	16

~~$$\begin{array}{l} 16x^2 \\ -8x \end{array}$$~~

$3x^2$	
$2x$	-8

~~$$\begin{array}{l} 10x^2 \\ -8 \end{array}$$~~

$$\textcircled{b} \quad \frac{10x+25}{2x^2-x-15} = \underline{\hspace{2cm}}$$

$$\textcircled{c} \quad \frac{\cancel{(k-4)}\cancel{(2k+1)}}{5\cancel{(2k+1)}} \div \frac{\cancel{(k-3)}\cancel{(k-4)}}{10\cancel{(k-3)}}$$

$$\frac{k-4}{5} \div \frac{k-4}{10}$$

$$\frac{\cancel{k-4}}{5} \cdot \frac{\cancel{10}}{\cancel{k-4} \cdot 2}$$

$$= 2$$

79

$$4x+3 = 3x+3$$

b

$$3(x-4) - x = 5 + 2x$$

a

$$x = 0$$

So 1 solution

$$3x - 12 - x = 5 + 2x$$

$$2x - 12 = 5 + 2x$$

$$-12 = 5$$

false statement

so no solutions

c

d

$$\boxed{81} \quad 5 + 3x < 5$$

-5
 -5

Inequality with 1 variable

$$3x < 0$$

$$\textcircled{b} \quad -3x \geq 8 - x$$

$+3x$
 $+3x$

\geq

Alternative method

$$-3x \geq 8 - x$$

$+x$
 $+x$

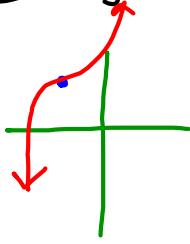
$$-2x \geq 8$$

$<$

84

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

a



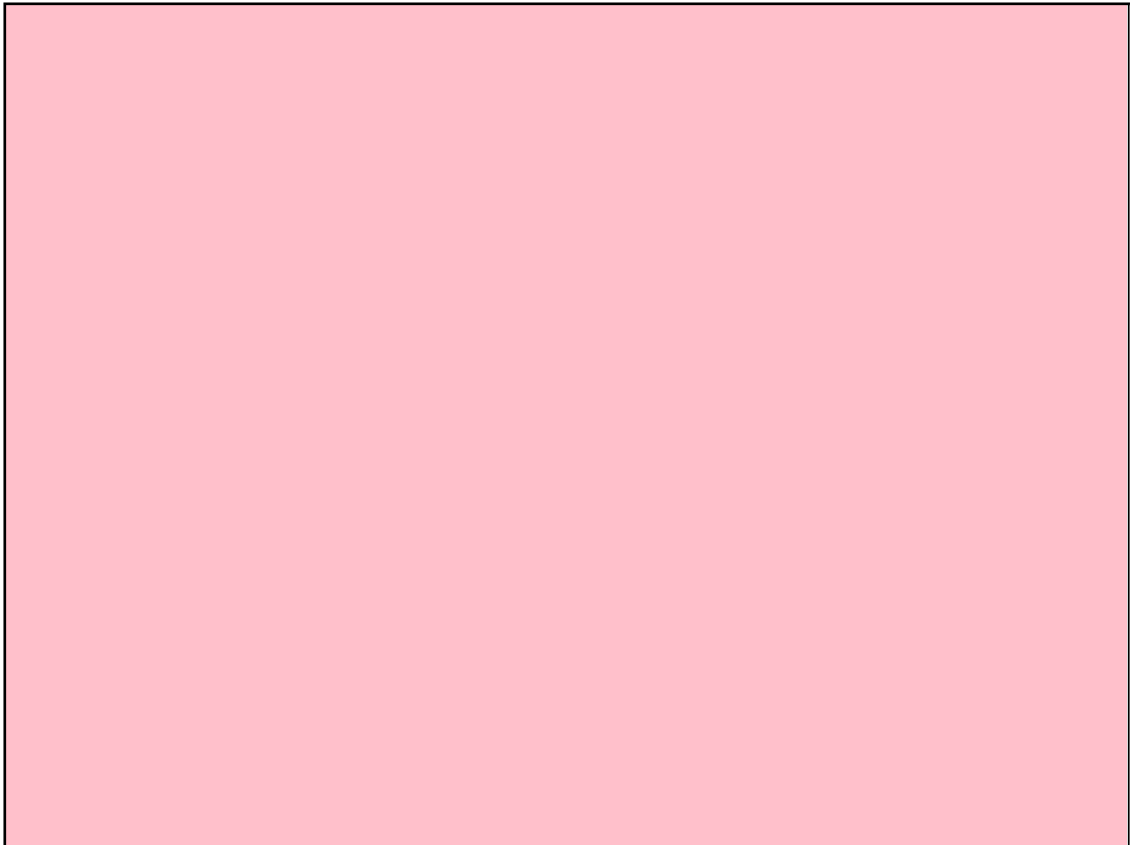
$$b \quad y = (x+2)(x+2)(x+2) + 4$$

$$y = (\quad) (x+2) + 4$$

the rest can be
seen in the
solutions

LATER TODAY. . . LCQ

- RECENT HW QUESTIONS
- RECENT CLASS "STUFF"
- SOMETHINGS FROM TODAY'S LESSON





use your understanding of
fractions to:

Multiply and Divide **Rational** Expressions

(ALWAYS factor first!)

Rational
Expression



Rational
Expression

will look like :

$$\frac{2x-5}{x+3} \cdot \frac{3(x+3)}{2x+10}$$

which means :

$$\frac{3(2x-5)(x+3)}{(x+3)(2x+10)}$$

You will be given a
sheet with 6 questions

- if you wish you can staple/tape
into your notes

Write down restrictions on
a, b, and c only

Lesson 3.2.3 Multiplying and Dividing Rational Expressions

[Factor first !
 Look for common factors
 Look for Diff. of Squares
 Factor quadratic Trinomials]

Simplify and state restrictions

a) $\frac{4x+3}{x-5} \cdot \frac{x-5}{x+3} \rightarrow \frac{4x+3}{x+3} \quad x \neq 5, x \neq -3$

b) $\frac{x+2}{9x-1} \div \frac{2x+1}{(27x-3)} \rightarrow \frac{x+2}{9x-1} \cdot \frac{3(9x-1)}{2x+1}$

$9x-1=0$
 $9x=1$
 $x=\frac{1}{9}$

$X \neq \frac{1}{9} \quad X \neq -5$

$\rightarrow \frac{3(x+2)}{2x+1}$

c) $\frac{2m+3}{3m-2} \cdot \frac{7+4m}{3+2m} \rightarrow \boxed{\frac{7+4m}{3m-2}}$ $m \neq \frac{2}{3} \quad m \neq -\frac{5}{2}$

$3m-2=0$
 $3m=2$
 $m=\frac{2}{3}$

$3+2m=0$
 $2m=-3$
 $m=-\frac{3}{2}$

d) $\frac{(y-2)^2}{3y} \cdot \frac{y+5}{(y+2)(y-2)} \rightarrow \boxed{\frac{(y-2)^2(y+5)}{3y(y+2)}}$

$y \neq 0$
 $y \neq -2$
 $y \neq 2$

Simplify (restrictions not required)

e) $\frac{5 \cdot 15x^3}{3y} \div \frac{5 \cdot 10x^2}{24y^2} \rightarrow \frac{5x^3}{y} \cdot \frac{2y}{5x^2} \rightarrow \frac{2x}{1} \rightarrow \boxed{2x}$

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

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

$$\boxed{3x+1}$$

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

No canceling factors if $\frac{0}{0}$

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

$$= \frac{3x+1}{2x-3}$$

B.B.

Now
higher
level questions

In your notes

- a) Write down the problem
- b) Factor everything first
- c) Then look for factors to cancel.

$$\frac{n^2 - 25}{10n + 20} \odot \frac{2n^2 - 8}{n^2 + 7n + 10}$$

diff. of
squares

$$\frac{n^2 - 25}{10n + 20}$$

$$10n + 20$$

simple
factoring

simple factoring

$$\frac{2n^2 - 8}{n^2 + 7n + 10}$$

$$n^2 + 7n + 10$$

factor as
a normal
trinomial

$$\frac{n^2-25}{10n+20} \cdot \frac{2n^2-8}{n^2+7n+10} \rightarrow \frac{\cancel{(n+5)}(n-5)}{5\cancel{10}(n+2)} \cdot \frac{\cancel{2}(n^2-4)}{\cancel{(n+5)}(n+2)}$$

$$\frac{n-5}{5\cancel{(n+2)}} \cdot \frac{\cancel{(n+2)}(n-2)}{n+2}$$

$$\boxed{\frac{(n-5)(n-2)}{5(n+2)}}$$

lastly

$$\frac{12x-18}{x-3} \cdot \frac{3x^2-9x-12}{6-2x}$$

do all factoring before anything else

simple \rightarrow $\frac{12x-18}{x-3} \div \frac{3x^2-9x-12}{6-2x}$ \leftarrow simple factoring then.....

$\frac{6(2x-3)}{x-3} \div \frac{3(x^2-3x-4)}{2(3-x)}$ \leftarrow simple

$\frac{12x-18}{x+3} \div \frac{3x^2-9x-12}{6-2x}$

\downarrow

$\frac{6(2x-3)}{x-3} \div \frac{3(x^2-3x-4)}{2(3-x)}$

\downarrow invert {multiply

$\frac{2\cancel{6}(2x-3)}{\cancel{x-3}} \cdot \frac{\cancel{-2}(x-3)\cancel{2}(3-x)}{\cancel{3}(x-4)(x+1)}$ \rightarrow $\frac{-4(2x-3)}{(x-4)(x+1)}$

$$\frac{2x-18}{x+3} \cdot \frac{3x^2-9x-12}{6-2x}$$

↓

$$\frac{6(2x-3)}{x-3} \cdot \frac{3(x^2-3x-4)}{2(3-x)}$$

↓

$$\frac{6(2x-3)}{x-3} \cdot \frac{2(3-x)}{3(x-4)(x+1)}$$

Assignment:

3 90 to 94, 96