Pick Up the WARM UP

QUESTIONS on HW

(1) $\frac{-9x^3}{18x^2} = -\frac{x}{2}$

(2) $\frac{16x^2y}{28xy} = \frac{4x}{7}$ $\quad \frac{4}{7}x$

(3) $\frac{-70x^2y}{100xy^2} = -\frac{7x}{10y^2}$

(4) $\frac{3(x-5)(5x+1)}{15(x-5)} = \frac{5x+1}{5}$

(5) $\frac{2x-4}{x-2} = \frac{2(x-2)}{x-2} = 2$

(6) $\frac{x^2+4x}{2x+8} = \frac{x(x+4)}{2(x+4)} = \frac{x}{2}$

(7) $\frac{n^2-16}{4n-12} = \frac{(n+4)(n-4)}{4(n-3)}$

can't be simplified

(8) $\frac{a-b}{b-a} = \frac{(a-b)}{-(a-b)} = \frac{1}{-1} = -1$

$\frac{7-1}{1-7}$

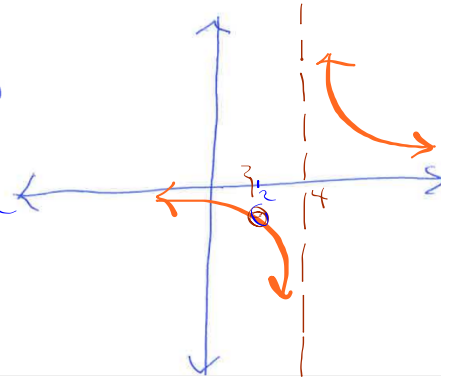
3-10

10-3

-(10-3)

⑨ Analyze the function $y = \dfrac{(2x-4)}{[(x-4)(x-2)]}$ ← needs double brackets

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



2B / B·B

b) Describe all discontinuities

hole at $x=2$

VA at $x=4$

HA at $y=0$

c) Domain:

$-\infty < x < \infty$, $x \neq 2$, $x \neq 4$

d) range:

$-\infty < y < \infty$, $y \neq 0$

Questions on HW?

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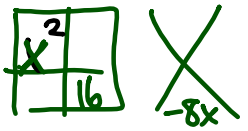
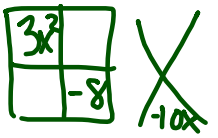
(a)

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

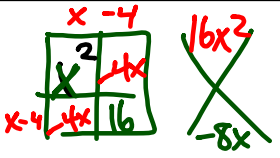


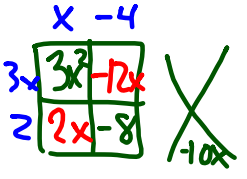


78

(a)

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





(b) $\frac{10x+25}{2x^2-x-15} = \frac{5(2x+5)}{(2x+5)(x-3)} = \boxed{\frac{5}{x-3}}$

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

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

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

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$4x+3=3x+3$

(a)

$x=0$

so 1 solution

(b)

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

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

$2x-12=5+2x$

$-2x \quad -2x$

$-12=5$

false statement

so no solutions

(c)

(d)

81 $5 + 3x < 5$

$-5 \quad -5$

Inequality with 1 variable

$3x < 0$

(b) $-3x \geq 8 - x$

$+3x \quad +3x$

$\geq$

Alternative method

$-3x \geq 8 - x$

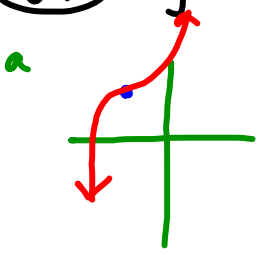
$+x \quad +x$

$-2x \geq 8$

$\leq$

84 $y = (x+2)^3 + 4$

a



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

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

the rest can be seen in the solutions

LATER TODAY. . .LCQ

- RECENT HW QUESTIONS
- RECENT CLASS "STUFF"
- SOMETHINGS FROM TODAYS 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: $\frac{3(2x-5)(x+3)}{(x+3)(2x+10)}$

do 3-87

a, b, c, and d

for now

✓ Write down
✓ Then simplify

Write down restrictions on
a, b, and c only

a. $\frac{4x+3}{x-5} \cdot \frac{x-5}{x+3}$

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

$x \neq -3$

$x \neq 5$

b. $\frac{x+2}{9x-1} \div \frac{2x+1}{9x-1}$

$\frac{x+2}{9x-1} \cdot \frac{9x-1}{2x+1}$

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

$x \neq \frac{1}{9}$

$x \neq -\frac{1}{2}$

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

$2x+1=0$
$2x=-1$
$x=-\frac{1}{2}$

c. $\frac{2m+3}{3m-2} \cdot \frac{7+4m}{3+2m}$ → $\frac{7+4m}{3m-2}$

$m \neq \frac{2}{3}$

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

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

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

now (e) and (f)

e. $\frac{15x^3}{3y} \div \frac{10x^2y}{4y^2}$

$\frac{15x^3}{3y} \times \frac{4y^2}{10x^2y}$

2x

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

No canceling factors if $\div$

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

$(2x-3)$

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

B.B.

Now higher level questions

a) Write down the problem

b) Factor everything first

c) Then look for factors to cancel.

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

diff. of squares

simple factoring

$2(n^2-4)$

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

factor as a normal trinomial

simple factoring

$10(n+2)$

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

$$\frac{n-5}{5(n+2)} \cdot \frac{(n+2)(n-2)}{n+\cancel{7}} \rightarrow \frac{(n-5)(n-2)}{5(n+2)}$$

$$\frac{(n-5)(n-2)}{5(n+7)}$$

lastly

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

do all factoring before anything else

simple

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

simple. factoring then.....

simple

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

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

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

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

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

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

Assignment:

3 .... 90 to 94, 96