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CC ALGEBRA 2

TROICI

LESSON #2: EQUIVALENT RATIONAL EXPRESSIONS (DAY 2)

Do Now:

Reduce the following rational expressions to lowest terms.

a) $\frac{25a^6b^4c}{-35a^5b^2c}$

$\frac{5ab^2}{-7}$

b) $\frac{12x^3y^3}{8x^5y}$

$\frac{3y^2}{2x^2}$

c) $\frac{a-b}{b-a}$

-1

d) $\frac{a+b}{a-b}$

simplest form

Reduce the following rational expressions to lowest terms, and identify the values of the variable(s) that must be excluded to prevent division by zero.

1) $\frac{2n-10}{n^2-25}$
GCF
DOTS

$\frac{2(n-5)}{(n+5)(n-5)} = \frac{2}{n+5}$
where $n \neq \pm 5$

2) $\frac{8+2x}{2x^2-32}$
GCF
DOTS

$\frac{2(4+x)}{2(x^2-16)} = \frac{2(4+x)}{2(x+4)(x-4)} = \frac{1}{x-4}$
where $x \neq \pm 4$

To help us identify the values of the variable(s) that must be excluded to prevent division by zero, set the "factored" denominator equal to zero and solve for these value(s)

PARTNER PRACTICE:

3) $\frac{y-2}{y^2-5y+6}$
am

$\frac{y-2}{(y-3)(y-2)} = \frac{1}{y-3}$
where $x \neq 3, 2$

4) $\frac{8-2x}{x^2-8x+16}$
am
GCF $\star -1!$

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

$$5) \frac{y^2 - y - 6}{3y^2 - 15y + 18} = \frac{(y-3)(y+2)}{3(y^2 - 5y + 6)}$$

GCF
+
am

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

$$= \frac{y+2}{3(y-2)} \text{ where } x \neq 3, 2$$

rain bow

$$6) \frac{2x^2 - 7x + 3}{(x-3)^2} = \frac{2x^2 - 1x - 6x + 3}{x(2x-1) - 3(2x-1)}$$

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

$$= \frac{2x-1}{x-3}, \text{ where } x \neq \frac{1}{2}, 3$$

GCF
3x+3y
weird tri.
am

$$7) \frac{3x+3y}{y^2 + 2xy + x^2} = \frac{3(x+y)}{(y+x)(y+x)}$$

$$= \frac{3}{y+x}, \text{ where } x \neq y \text{ and } -x \neq y \text{ and } x, y \neq 0$$

grouping

$$8) \frac{x^3 - x^2 - x + 1}{x^2 - 2x + 1} = \frac{x^2(x-1) - 1(x-1)}{(x^2-1)(x-1)}$$

$$= \frac{(x+1)(x-1)(x-1)}{(x-1)(x-1)}$$

$$= x+1 \text{ where } x \neq 1$$

GCF
4x-2y
3y-6x
GCF

$$9) \frac{4x-2y}{3y-6x} = \frac{2(2x-y)}{3(y-2x)} = \frac{-2}{3} \text{ where } x, y \neq 0$$

rewritten

$$10) \frac{x^2 - 7x + 12}{6 - 5x + x^2} = \frac{x^2 - 7x + 12}{x^2 - 5x + 6}$$

$$= \frac{(x-4)(x-3)}{(x-2)(x-3)}$$

$$= \frac{x-4}{x-2} \text{ where } x \neq 2, 3$$