

EOC Review 6

1)

Which expression is equivalent to the following expression if no denominators equal zero?

$$\frac{\frac{11-w}{30w^2} \cdot \frac{5w^6}{w-11}}{\frac{5w^6}{5w^6}}$$

- A $\frac{w^4}{6}$
- B $\frac{6}{w^3}$
- C $\frac{w^3}{6}$
- D $\frac{6}{w^4}$

$$-1 \frac{w^4}{30w^2} \cdot \frac{5w^6}{w-11} = \frac{-5w^6}{30w^2} = \frac{-w^4}{6}$$

2)

If no denominator equals zero, which expression is equivalent to $\frac{25-4x^2}{6x^2+9x-15} \cdot \frac{6x^2-2x-4}{2x^2-x-10}$?

- A -2
 - B 2
 - C $\frac{-2(3x+2)}{3(x+2)}$
 - D $\frac{2(3x+2)}{3(x+2)}$
- $$\frac{-4x^2+25}{6x^2+9x-15} \cdot \frac{6x^2-2x-4}{2x^2-x-10}$$
- $$\frac{-1(4x^2-25)}{3(2x^2+3x-5)} \cdot \frac{2(x^2-x-5)}{2(x^2-x-10)}$$
- $$\frac{-1(2x+5)(2x-5)}{3(x+1)(2x+5)} \cdot \frac{2(x+1)(x+5)}{2(x+1)(x+5)}$$

Assuming the denominators do NOT equal zero, which expression is equivalent to $\frac{12}{x+1} + \frac{1}{x-4}$?

- A $\frac{13x-47}{(x+1)(x-4)}$
- B $\frac{13}{(x+1)(x-4)}$
- C $\frac{13x-47}{2x-3}$
- D $\frac{13}{2x-3}$

$$\frac{12(x-4)}{(x+1)(x-4)} + \frac{1(x+1)}{(x+1)(x-4)}$$

$$12x-48 + x+1 = \frac{13x-47}{(x+1)(x-4)}$$

3)

149) Determine the greatest value of x for which

$$\frac{(x+10)(x+5)(x+3)}{x^2-25} = 1$$

- A. -3
- B. -5
- C. -7
- D. -12

plug in each value and check

$$\frac{(-7+10)(-7+5)(-7+3)}{(-7)^2-25}$$

$$\frac{3 \cdot -2 \cdot -4}{24-25} = \frac{24}{-1} = -24$$

4) What nonzero value of x is a solution to the following equation?

$$\frac{x+2}{x} + \frac{x-6}{3x} = \frac{2x+9}{5x}$$

A $x = \frac{27}{14}$
 B $x = \frac{17}{14}$
 C $x = \frac{13}{14}$
 D $x = \frac{5}{14}$

$$\frac{15(x+2)}{15x} + \frac{5(x-6)}{15x} = \frac{3(2x+9)}{15x}$$

$$15x+30 + 5x-30 = 6x+27$$

$$20x = 6x+27$$

$$14x = 27$$

$$x = \frac{27}{14}$$

5) If no denominator is equal to zero, what is the solution set for the following equation?

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

A $\left\{ \frac{8}{3} \right\}$
 B $\left\{ \frac{8}{9} \right\}$
 C $\left\{ \frac{-2}{3}, 2 \right\}$
 D $\left\{ \frac{-2}{3}, \frac{2}{3} \right\}$

$$3x^2 = 2x(3x-4)$$

$$3x^2 = 6x^2 - 8x$$

$$3x^2 - 8x = 0$$

$$x(3x-8) = 0$$

$$x=0 \quad 3x-8=0$$

$$3x=8$$

$$x = \frac{8}{3}$$

6) Which expression is equivalent to $\frac{3n}{n+3} + \frac{5}{n-4}$ if no denominator equals zero?

A $\frac{3n^2-7n+3}{(n+3)(n-4)}$
 B $\frac{3n^2-7n+15}{(n+3)(n-4)}$
 C $\frac{3n^2+5n+3}{(n+3)(n-4)}$
 D $\frac{3n^2+5n+15}{(n+3)(n-4)}$

$$\frac{3n(n-4)}{(n+3)(n-4)} + \frac{5(n+3)}{(n+3)(n-4)}$$

$$3n^2-12n + 5n+15$$

$$\frac{3n^2-7n+15}{(n+3)(n-4)}$$

7) Assuming that no denominator equals zero, which is equivalent to $\frac{r^2-r-6}{(r-2)(r-3)}$?

A $\frac{r+2}{r-2}$
 B $\frac{r+3}{r-3}$
 C $\frac{r+2}{r-1}$
 D $\frac{2(r-1)}{r-2}$

$$\frac{(r-3)(r+2)}{(r-2)(r-3)}$$

Given:

8)

$$\frac{n-15}{9n} \cdot \frac{3n^5}{15-n} \cdot \frac{3n^5}{3n^5}$$

Assuming no denominator equals zero, which expression is equivalent to the given expression?

- A. $\frac{-n^4}{3}$
- B. $\frac{n^4}{3}$
- C. $\frac{-3}{n^4}$
- D. $\frac{3}{n^4}$

$$\frac{n-15}{9n} \cdot \frac{3n^5}{15-n}$$

$$\frac{-1(15-n) \cdot 3n^5}{39n} \cdot \frac{3n^5}{15-n} = \frac{-n^4}{3}$$

9) Which is a solution to $\frac{4n-37}{3} = \frac{10}{n}$, if $n \neq 0$?

- A. -10
- B. $-\frac{27}{4}$
- C. $-\frac{10}{11}$
- D. $-\frac{3}{4}$

$$30 = 4n^2 - 37n$$

$$4n^2 - 37n - 30 = 0$$

$$n^2 - 37n + 120 = 0$$

$$(n-40)(n+3) = 0$$

$$(n-10)(4n+3) = 0$$

$$n=10 \quad n = -3/4$$

10) The domain of the function $f(x) = \frac{x+3}{x^2+5x-24}$ is all real numbers except -

- A. -8, -3, 3
- B. 8, 3
- C. -3, 8
- D. 8

$$\frac{x+3}{(x-3)(x+8)}$$

$$x \neq 3 \quad x \neq -8$$

139) What is the solution set of $\frac{1}{x} + \frac{1}{x+2} = \frac{5}{12}$?

- A. {1, 2}
- B. {7, 6}
- C. {-1, 2, 4}
- D. $\left\{ \frac{-8 \pm \sqrt{145}}{5} \right\}$

$$\frac{12(x+2)}{12x(x+2)} + \frac{12x}{12x(x+2)} = \frac{5x(x+2)}{12x(x+2)}$$

$$12x+24 + 12x = 5x^2+10x$$

$$24x+24 = 5x^2+10x$$

144) While working on a resistance problem, an electrical engineer encounters the equation

$$\frac{3x-5}{x^2-2x-3} - \frac{2x+5}{x^2-x-2} = 0$$

Before continuing her work, she must solve the equation. If only nonnegative values are acceptable, what solution(s) will she find?

- A. 5
- B. 10
- C. 1 and 0
- D. 2 and 3

$$\frac{3x-5}{(x-3)(x+1)} - \frac{2x+5}{(x-2)(x+1)} = 0$$

$$\frac{(3x-5)(x-2)}{(x-3)(x+1)(x-2)} - \frac{(2x+5)(x-3)}{(x-2)(x+1)(x-3)} = 0$$

$$3x^2 - 11x + 10 - (2x^2 - x - 15) = 0$$

$$x^2 - 10x + 25 = 0 \quad (x-5)(x-5) = 0$$