

Date: _____

Name: _____

Block: _____

MATH 10 - CHAPTER 4 TEST: RATIONAL EXPRESSIONS-version e.
Supplemental Test.

1. Indicate which value(s) must not be substituted into the following expressions:

b. $\frac{x^2}{3x^2 - 9x}$ $3x(x-3) \neq 0$ $3x \neq 0 \quad x-3 \neq 0$ $x \neq 0 \quad x \neq 3$	d. $\frac{x+2}{\frac{x+3}{\frac{x-1}{x+5}}}$ $x \neq -3, 1, -5$
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PART B: SIMPLIFY: SHOW SOME WORK.

2. $\frac{25x^3 - 10x^4 + 15x^2}{5x^2} = \frac{5x^2(5x - 2x^2 + 3)}{5x^2} = 5x - 2x^2 + 3 = -(2x+1)(x-3)$
3. $\frac{a+b-c}{2a+2b-2c} = \frac{a+b-c}{2(a+b-c)} = \frac{1}{2}$
4. $\frac{x^3 + 3x^2}{x+3} = \frac{x^2(x+3)}{(x+3)} = x^2$
5. $\frac{4x^2 + 11x - 3}{x+3} = \frac{(x+3)(4x-1)}{(x+3)} = 4x-1$
6. $\frac{2x^2 + 15x + 7}{x+7} = \frac{(x+7)(2x+1)}{x+7} = 2x+1$
7. $\frac{50b^2 - 8a^2}{10b - 4a} = \frac{2(25b^2 - 4a^2)}{2(5b - 2a)} = \frac{(5b-2a)(5b+2a)}{5b-2a} = 5b+2a$
8. $\frac{y^2 + 4y - 21}{y^2 + 9y + 14} = \frac{(y+7)(y-3)}{(y+7)(y+2)} = \frac{y-3}{y+2}$

PART C: SIMPLIFY (Multiplying & Dividing Questions).

1. $\frac{(r-7)}{8a^2} \times \frac{2a(r+7)}{r^2-49} = \frac{2a}{8a^2} = \frac{1}{4a}$
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2.	$\frac{(x^2+2x-15)}{(x^2-9)} \div \left(\frac{x+3}{x^2-25}\right) = \frac{(x+5)(x-3)}{(x+3)(x-3)} \cdot \frac{(x+3)}{(x+5)(x-5)} = \frac{1}{x-5}$
3.	$\frac{3-x}{3x-9} \div \left(\frac{3-x}{6-2x}\right) = \frac{3-x}{3(x-3)} \times \frac{2(3-x)}{3-x} = \frac{-2}{3}$
4.	$\frac{(x^2-4)}{(x^2+5x+6)} \div \left(\frac{x^2-x-2}{x+3}\right) = \frac{(x+2)(x-2)}{(x+2)(x+3)} \times \frac{(x+3)}{(x-2)(x+1)} = \frac{1}{x+1}$
5.	$\frac{a^2+a-12}{a^2-a-6} \div \frac{a^2-a-20}{a^2-5a-14} = \frac{(a+4)(a-3)}{(a-3)(a+2)} \times \frac{(a-7)(a+2)}{(a-5)(a+4)} = \frac{a-7}{a-5}$

PART D: SIMPLIFY: ADDITION AND SUBTRACTION.

1.	$\frac{9}{2m} - \frac{5}{6m} + \frac{3}{5m} = \frac{135-25+18}{30m} = \frac{178}{30m}$
2.	$\frac{2p+3}{7} - \frac{4-2p}{3} = \frac{3(2p+3) - 7(4-2p)}{21} = \frac{6p+9-28+14p}{21} = \frac{20p-19}{21}$
3.	$\frac{2m+1}{3a} - \frac{3-2m}{4} = \frac{4(2m+1) - 3a(3-2m)}{12a} = \frac{8m+4-9a+6am}{12a}$
4.	$\frac{3}{3a^2} + \frac{6}{5a} - \frac{7}{10} = \frac{3(10) + 6(6a) - 7(3a^2)}{30a^2} = \frac{30 + 36a - 21a^2}{30a^2}$
5.	$\frac{2x^2-x}{x+2} - \frac{x^2+6}{x+2} = \frac{x^2-x-6}{x+2} = \frac{(x-3)(x+2)}{(x+2)} = (x-3)$
6.	$\frac{4}{b+3} - \frac{5}{b^2-9} - \frac{3}{b-3} = \frac{4(b-3) - 5 - 3(b+3)}{b^2-9} = \frac{4b-12-5-3b-9}{b^2-9}$

$$= \frac{b-26}{b^2-9}$$

PART E: PROBLEMS.

1.	Solve this formula for X. $\frac{1}{z} = \frac{1}{x} - \frac{1}{y}$ $\frac{1}{z} = \frac{1}{z} - \frac{1}{y}$ $\frac{1}{z} = \frac{y-z}{zy}$ $x = \frac{zy}{y-z}$
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