

Name: Key

TA: _____

Math 11 Pre-Calculus LG 10 Ver A

1. Write each rational expression in simplest form. State any non-permissible values for the variables.

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

$x \neq 0, 3$

b) $\frac{3x-6}{12-6x} = \frac{3(x-2)}{-6(x-2)}$

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

c) $\frac{x^2-x-12}{2x^2-32}$

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

$= \frac{(x+3)}{2(x+4)}$ $x \neq \pm 4$

d) $\frac{3x^2-13x-10}{x^2-x-20}$

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

$= \frac{3x+2}{x+4}$ $x \neq -4, 5$

2. Multiply or divide each rational expression.

a) $\frac{3(a-b)}{(a-2)(a+1)} \times \frac{(a-2)(a+2)}{6(a-b)}$

$= \frac{(a+2)}{2(a+1)}$

b) $\frac{x^2+3x+2}{2x+2} \times \frac{2x+6}{x^2+5x+6}$

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

$= 1$

$$c) \frac{6x^2}{5y} \div \frac{2x}{y^3}$$

$$\frac{6x^2}{5y} \times \frac{y^3}{2x} = \frac{3xy^2}{5}$$

$$d) \frac{x+2}{x^3+3x^2+2x} \div \frac{x^2-4}{3x^2+8x+4}$$

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

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

$$3x^2 + 6x + 2x + 4$$

$$3x(x+2) + 2(x+2)$$

3. Add or subtract. Give answers in simplest form.

$$a) \frac{2}{3ab^2} + \frac{5}{6a^2b^3}$$

$$= \frac{4ab+5}{6a^2b^3}$$

$$b) \frac{2x}{x^2+5x+6} - \frac{x-6}{x^2+6x+8}$$

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

$$= \frac{2x^2+8x}{() () ()} - \frac{x^2-3x-18}{() () ()}$$

$$\frac{x^2+11x+18}{() () ()} = \frac{(x+9)\cancel{(x+2)}}{\cancel{(x+2)}(x+3)(x+4)}$$

$$= \frac{x+9}{(x+3)(x+4)}$$

4. Simplify each rational expression

$$a) \frac{x^2-3x+2}{x^2-4} \times \frac{x+3}{x^2+3x} \div \frac{1}{x+2}$$

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

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

$$b) \frac{2x}{4x^2-9} + \frac{x}{2x^2+5x+3} - \frac{1}{2x-3}$$

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

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

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

$$2x^2+2x+3x+3$$

$$2x(x+1)+3(x+1)$$

$$(2x+3)(x+1)$$