

NAME: _____ Score _____/10

Please **print** your name**SHOW ALL YOUR WORK IN A NEAT AND ORGANIZED FASHION****THERE ARE TWO SIDES TO THIS QUIZ**

1. Perform the multiplication and simplify. $\left(\frac{x^2 - 9}{4}\right)\left(\frac{x^2 - x - 6}{x^2 - 6x + 9}\right)$

$$\left(\frac{x^2 - 9}{4}\right)\left(\frac{x^2 - x - 6}{x^2 - 6x + 9}\right) = \left(\frac{(x-3)(x+3)}{4}\right)\left(\frac{(x-3)(x+2)}{(x-3)^2}\right) = \left(\frac{(x-3)^2}{(x-3)^2}\right)\left(\frac{(x+3)(x+2)}{4}\right)$$

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

2. Perform the addition and simplify. $\left(\frac{3}{5-x}\right) + \left(\frac{x+2}{x-5}\right)$

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

3. Write the opposite of $\frac{x+3}{1-x}$. The opposite of $\frac{x+3}{1-x}$ is $\frac{x+3}{x-1}$

4. Perform the division and simplify. $\left(\frac{2x}{5}\right) \div \left(\frac{6x+12}{5x+10}\right)$

$$\left(\frac{2x}{5}\right) \div \left(\frac{6x+12}{5x+10}\right) = \left(\frac{2x}{5}\right)\left(\frac{5x+10}{6x+12}\right) = \left(\frac{2x}{5}\right)\left(\frac{5(x+2)}{(3)(2)(x+2)}\right) = \frac{x}{3}$$

5. Simplify the complex fraction $\frac{\frac{x}{9} - \frac{1}{x}}{1 + \frac{3}{x}}$

$$\frac{\frac{x}{9} - \frac{1}{x}}{1 + \frac{3}{x}} = \frac{\frac{x^2 - 9}{9x}}{\frac{x+3}{x}} = \left(\frac{(x-3)(x+3)}{9x}\right)\left(\frac{x}{x+3}\right) = \frac{x-3}{9}$$