

Quiz 2

Name: _____

Solutions given without showing work will earn a zero. This quiz is closed-book. Circle your answers.

Problem 1. [3 points] Multiply $\frac{2x^2 + 3x + 1}{2x + 10} \cdot \frac{1}{4x + 4}$ and simplify your answer.

$$\begin{array}{l}
 \begin{array}{r}
 2 \\
 \cdot \\
 2 \quad 1 \\
 + \\
 3
 \end{array}
 \end{array}
 \begin{array}{l}
 2x^2 + 3x + 1 \\
 2x(x+1) + 1(x+1) \\
 (x+1)(2x+1)
 \end{array}
 \begin{array}{l}
 \cancel{(x+1)}(2x+1) \\
 \hline
 2(x+5)
 \end{array}
 \cdot
 \begin{array}{l}
 1 \\
 \hline
 4\cancel{(x+1)}
 \end{array}
 = \boxed{\frac{2x+1}{8(x+5)}}$$

Problem 2. [4 points] Divide $\frac{3x - 12}{x^2 - 4} \div \frac{x - 4}{x^2 + 6x + 8}$ and simplify your answer.

$$\begin{array}{l}
 x^2 - 4 \\
 = x^2 - 2^2 \\
 = (x+2)(x-2)
 \end{array}
 \begin{array}{l}
 \begin{array}{r}
 8 \\
 \cdot \\
 4 \quad 2 \\
 + \\
 6
 \end{array}
 \end{array}
 \begin{array}{l}
 (x+4)(x+2)
 \end{array}
 \begin{array}{l}
 \frac{3\cancel{(x-4)}}{\cancel{(x+2)}(x-2)} \cdot \frac{\cancel{(x+4)}\cancel{(x+2)}}{\cancel{x-4}} \\
 = \boxed{\frac{3(x+4)}{x-2}}
 \end{array}$$

Problem 3. [3 points] Find the least common denominator (LCD) of $\frac{1}{x^2 - 4}$ and $\frac{x}{x^2 - 4x + 4}$.

$$\begin{array}{l}
 x^2 - 4 = (x+2)(x-2) \\
 \begin{array}{r}
 4 \\
 \cdot \\
 -2 \quad -2 \\
 + \\
 -4
 \end{array}
 \end{array}
 \begin{array}{l}
 x^2 - 4x + 4 \\
 = (x-2)(x-2)
 \end{array}
 \begin{array}{l}
 \text{Factors} \\
 x+2 \\
 (x-2)^2 \\
 \text{LCD} = \boxed{(x+2)(x-2)^2}
 \end{array}$$