Directions: Please answer the following questions and make sure your answer are legible. If you don’t show work and/or I can’t follow it, I won’t give partial credit. You may not use a calculator (or any other technology) on this quiz. Good Luck.

1. (3 points) Evaluate each expression (simplify as much as possible)
   (a) \( \frac{1}{12} + \frac{5}{5 - 1} \) = \( \frac{1}{12} + \frac{5}{4} \) = \( \frac{1}{12} + \frac{15}{12} \) = \( \frac{16}{12} \) = \( \frac{4}{3} \)
   (b) \( \frac{7}{10} - \frac{2}{15} \) = \( \frac{7}{10} - \frac{8}{15} \) = \( \frac{21}{30} - \frac{8}{30} \) = \( \frac{13}{30} \)
   (c) \( \frac{12}{5} \cdot \frac{3}{10} \) = \( \frac{36}{50} \) = \( \frac{18}{25} \)

2. (2 points) Evaluate the expression \( \sqrt[4]{y^2 - 5x} \) when \( x = -4 \) and \( y = -3. \)
   \( \sqrt[4]{(-3)^2 - 5(-4)} \)
   \( = 3 - 20 \frac{1}{4} \)
   \( = 3 - 20 = -17 \)

3. (4 points) Use the distributive property to remove parenthesis in the following expressions:
   (a) \((x - 2)(x - 7) = (x - 2)x + (x - 2)(-7) = x^2 - 3x - 14\)
   (b) \(x(8 - x) = 8x - x^2 = x^2 - 9x + 14\)

4. (2 points) Determine the domain of the variable \( x \) in the expression \( \frac{x}{3x + 1} \).
   \[ \{x | x \neq -\frac{1}{3}, x \neq 0 \} \]
   * restrict \( x \) so that \( (3x + 1) \neq 0 \)

5. (4 points) Simplify the expression \( \frac{(3xy)^{-2}z^5}{2x^3y^3z^{-1}} \).
   Express your answer so that all exponents are positive. Whenever an exponent is 0 or negative assume that the base is not 0.
   \[
   \frac{3^{-2} \cdot x^{-2} \cdot y^{-3} \cdot z^5}{2 \cdot x^3 \cdot y^3 \cdot z^{-1}} = \frac{y^{-3} \cdot z^5 \cdot z^{-2}}{3^2 \cdot x^3 \cdot y^3} = \frac{y \cdot z^6}{18 \cdot x^5}
   \]