BEGINNING ALGEBRA  MIDTERM 4

NAME: ____________________________

STUDENT ID # _____________________

SIGNATURE: _________________________

SEAT: ROW ____  COL ___

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In order to receive ANY credit, your solution must be organized and easy to follow.

(1) Factor completely: \(4x^2 - 8x - 480\)

(2) Solve \(2x(x^2 + 1) = 5x^2\)
(3) Simplify \( \frac{12 x^2 - 3}{4 x^2 - 2 x} \div \frac{8 x^2 + 8 x + 2}{8 x^3 + 4 x^2} \)

(4) Factor completely: \( 2 x^4 + 5 x^3 - 16 x - 40 \)
(5) Area of a rectangle is $480 \, \text{in}^2$, and the length of the rectangle is \(4\) inches more than 3 times the width. Find the length and the width of the rectangle.

(a) Set up a system of equations which describes the problem. (b) Solve the system of equations.

(6) A truck can travel 120 miles in the same time that it takes a car to travel 200 miles. If the car travels 20 miles/hour faster than the truck, what is the speed of the car and the truck?

(a) Set up a system of equations which describes the problem. (b) Solve the system of equations.
(7) Simplify \( \frac{4x}{2x - 3} + \frac{9}{3x - 2x^2} \)

(8) Simplify \( \frac{2x - 12}{x - 1} - \frac{8}{x - 1} \)
(9) Solve \( \frac{x^2}{x+1} = 4 + \frac{1}{x+1} \)

(10) A tree has a shadow of length 14 feet long. At the same time, near the tree, a vertical rod of 10 feet has a shadow of 4 feet. Find the height of the tree.

(a) Set up an equation which represents the problem. (b) Solve the equation.