

EXAM 3
Math 101
June 30, 2005

Name _____

Do all work neatly. Show all of your work. Circle your final answer where appropriate.

1. Factor the following problems

(a) $4a^3b^7 - 12a^4b^5 + 40a^3b^5$

(b) $y^3 + 27$

(c) $x^2 - 2x - 35$

(d) $6x^2 - 7x - 5$

(e) $4x^2 - 20x + 25$

2. Solve the following problems for the variables indicated.

(a) $2y^2 - 7y - 15 = 0$ for y

(b) $\frac{4y - 9}{8} = \frac{6 - 8y}{2}$ for y

(c) $x^2 + 2x = 15$ for x

3. Reduce to lowest terms (simplify).

(a) $\frac{x^2 + 10x + 16}{2x^2 + 15x - 8}$

4. Perform the operation indicated and reduce to lowest terms

$$(a) \left(\frac{7a^3b^2c}{3c} \right) \left(\frac{4b}{21a^2c} \right)$$

$$(b) \left(\frac{x}{x^2 - 9} \right) \div \left(\frac{3}{x - 3} \right)$$

$$(c) \left(\frac{x^2 + 10x + 25}{x^2 - 4} \right) \div \left(\frac{x + 5}{x - 2} \right)$$

5. Simplify the complex fraction to lowest terms

$$\frac{\left(\frac{x^2 - 7x + 6}{x^2 - 8x + 16} \right)}{\left(\frac{4x^2 - 1}{2x^2 - 7x - 4} \right)}$$

6. Simplify the expression. Use only positive exponents in your answers.

$$\frac{(3w^{-2}v^{-2})}{2w(6w^{-4}v^7)^{-2}}$$

7. Solve each of the following for x .

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

(b)
$$\frac{x}{6} + \frac{12}{2x} = \frac{x-2}{4}$$