

**EXAM 4**  
Math 101  
June 30, 2005

Name \_\_\_\_\_

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

1. Simplify the following. Express any answer using only positive exponents:

(a)  $\sqrt{50a^6y^3}$ .

(b)  $\left(\frac{25y^2}{3^6x^{-6}}\right)^{-\frac{1}{2}}$

(c)  $\sqrt[4]{81x^5y^9z^{12}}$ .

(d)  $\sqrt[3]{\frac{64m^7n^5}{2mn^3}}$

(e)  $\sqrt[7]{128x^7y^{15}z^3}$

2. Simplify:

(a)  $23\sqrt[5]{2a}(3\sqrt[5]{2a^3} + 7\sqrt[5]{5a^2})$

(b)  $x^{\frac{5}{4}} \cdot x^{\frac{15}{8}} \cdot x^{\frac{7}{8}}$

(c)  $(1 - \sqrt{2})(1 + \sqrt{2})$

(d)  $(16^{\frac{15}{6}})^{\frac{1}{10}}$

(e)  $\sqrt{20} - 2\sqrt{18} + \sqrt{8}$

3. Solve by the method indicated:

(a)  $4x^2 + 10x = 24$  by factoring

(b)  $(x - 3)^2 = 13$  by using the square root property

(c)  $x^2 - 8x + 16 = 4$  by using the square root property

(d)  $x^2 + 4x = 32$  by completing the square

(e)  $2x^2 = 3x + 7$  by the quadratic formula.

4. Solve for  $x$ . (You may use any method.)

(a)  $\sqrt{2x+3} - 3 = 6$ .

(b)  $x^2 + 13x + 40 = 0$ .

(c)  $3x^2 - 4x = 5$ .

(d)  $-4x^2 + 2x + 1 = 0$ .

(e)  $3x^2 - 5x - 22 = 0$ .