

Math 103.E45
Summer 2011
Exam #4

Name:

1. 5 pts. each Simplify each root.

(a) $\sqrt[6]{(-9)^6}$

(b) $\sqrt{(-r)^2}$

2. 5 pts. each Evaluate each exponential (show work, since you're supposed to be doing these by hand).

(a) $49^{3/2}$

(b) $81^{-3/4}$

3. 10 pts. each Simplify each expression. Write all answers with positive exponents. Assume that all variables represent positive real numbers.

(a) $r^{-8/9} \cdot r^{19/9}$

(b) $\frac{m^{3/4}n^{-1/4}}{(m^2n)^{1/2}}$

4. 10 pts. each Simplify. Assume variables represent positive numbers.

(a) $\sqrt{300}$

(b) $\sqrt{121x^2y^5}$

(c) $\sqrt[3]{-24t^5z^7}$

(d) $\sqrt{\frac{u^3}{81}}$

(e) $3\sqrt{8} + 8\sqrt{72} - 3\sqrt{18}$

5. 10 pts. Multiply, and then simplify the product:

$$(2\sqrt{3} + \sqrt{5})(3\sqrt{3} - 2\sqrt{5})$$

6. 10 pts. each Rationalize the denominator in each expression. Assume variables represent positive numbers.

(a) $\frac{8}{\sqrt{24}}$

(b) $\frac{4}{2 - \sqrt{3}}$

7. 10 pts. each Solve each charming little radical equation.

(a) $6 - \sqrt{4y - 1} = 0$

(b) $\sqrt{7z + 1} = z + 1$

8. 10 pts. each Subtract, multiply or divide the complex numbers as indicated, and write your answers in the form $a + bi$.

(a) $(9 + 11i) - (5 + 6i)$

(b) $3i(4 - 9i)$

(c) $\frac{2 - i}{1 + i}$

9. 10 pts. each Solve each enchanting little quadratic equation using the quadratic formula.

(a) $(x - 3)(x + 4) = 2$

(b) $x^2 + 4x + 9 = 0$