Math 127
Worksheet 1: Exponents and Radicals
5/28/2008

Name:_____

1. Simplify each of the following:

   (a) $40 + 10 \div 5 + 3 \cdot -2^2$

   (b) $-\left| -\left(-\left(-\frac{2}{3} + 1\right)\right) \right|$

   (c) $-9 - 5\left[\frac{11 - 9(-1)}{4(-5) + 2(5)}\right]$

   (d) $\frac{4}{7} - \frac{5}{6}$

   (e) $\frac{7}{12} \div \frac{5}{6}$

   (f) $5x + 3(-2x + 7) - 24$

2. Simplify each of the following using the properties of exponents. Your answer should contain only positive exponents.

   (a) $\left(a^4 b^7\right)^3 \cdot b^3$

   (b) $\left(2y^4\right)^{-2} \cdot 16y^{\frac{2}{5}}$

   (c) $\frac{7a^5 b^{-3}}{21a^3 b^{-5}}$

   (d) $\frac{\left(x^{-4}\right)^3 \left(x^3\right)^{-4}}{x^{12}}$

   (e) $\left(\frac{5x^5 y^4}{10x^2 y^{-3}}\right)^3$

   (f) $\left(\frac{a^3 b^2 c}{a^{-1} b^{-2} c^{-3}}\right)^{-2}$

3. Simplify each of the following using the properties of radicals. Your answers should be rationalized. You may assume that all variables represent positive real numbers.

   (a) $\sqrt{48x^5 y^6}$

   (b) $\sqrt[3]{16x^{11} y^7}$

   (c) $\frac{\sqrt{8x^3 y^2}}{\sqrt{4xy^5}}$

   (d) $\sqrt{\frac{3x^2 y}{6xy^3}}$

   (e) $\sqrt[3]{\frac{x^2 y^{-2}}{5xy^3}}$

   (f) $\frac{4}{3 - \sqrt{x}}$