Math-1003b Practice Exam #3

1). Simplify the following expressions:

    a). $\sqrt[3]{-64x^9y^{51}}$

    b). $\sqrt[4]{32p^{32}q^{40}}$

2). A tent pole is 6 feet high and is meant to be planted perpendicular to the ground. The rope used to support the pole is 8 feet long and is connected to the top of the pole. How far from the pole should the tent stake be planted so that the rope is taut?

3). Convert each of the following expressions to radical form and then simplify them. If the expression does not represent a real number then say "not a real number". When simplifying, you may start with either the rational exponent or radical form:

    a). $81^{\frac{3}{4}}$

    b). $81^{-\frac{1}{2}}$

    c). $(-25)^{\frac{3}{2}}$

    d). $-25^{\frac{1}{2}}$

    e). $(-27)^{-\frac{4}{3}}$

4). Simplify the following expressions. You may assume that the domain for all the variables is $[0, \infty)$.

    a).
$$\left(p^{\frac{1}{5}}p^{\frac{1}{3}}\right)^{15}$$

    b).
$$\left(\frac{2q^{-\frac{3}{4}}}{q^{\frac{5}{4}}}\right)^{3}$$

5). Simplify the following expressions. You may assume that the domain for all the variables is $[0, \infty)$:

    a). $\sqrt[4]{32} - \sqrt[4]{162}$

    b). $x^2y\sqrt{8y} + 2x\sqrt{18x^2y^3}$

6). Perform the following operations and simplify the results:

    a). $(3\sqrt{2} + 4\sqrt{3})(3\sqrt{2} - 2\sqrt{3})$

    b). $(\sqrt{z} - 4)(\sqrt{z} + 4)$

7). Rationalize the denomimators for the following expressions and simplify. You may assume that the domain for all the variables is $[0, \infty)$:

   a).

$$\frac{3}{\sqrt[3]{9x}}$$

   b).

$$\frac{2}{\sqrt{x} - 2}$$

8). Solve for x:

$$\sqrt[3]{x - 8} - 2 = 3$$

9). Solve for x:

$$\sqrt{x - 2} + 4 = 1$$

10). Solve for x:

$$1 + \sqrt{3x + 15} = x$$