Math 102 Midterm 2 name_____
February 23, 2012

Instructions: Show all your work, and draw a box around your final answer. No calculators are allowed.

1. Evaluate:

(a) $\left| -|-9+4|+2 \right|$

(b) $|3-5-2|-|-9|$

(c) $\sqrt[4]{3} \cdot \sqrt[4]{3} \cdot \sqrt[4]{3} \cdot \sqrt[4]{3}$

(d) $(-8)^{-\frac{2}{3}}$

(e) $(27)^{\frac{2}{3}}$

(f) $\left(\frac{4}{5}\right)^{-2}$

2. Solve the following equations. Check your solutions in the original equation.

If there are no solutions, or the answer is imaginary, say so.

(a) $\sqrt{5+u^3} = 2$

(b) $3 \cdot |5-3y| = 6$

(c) $(p-2)^2 = 16$

(d) $-(2m)^2 + 6 = -10$

(e) $-4(z+3)^2 - 12 = 0$

(f) $\sqrt[3]{m^2-16} - 4 = -4$

3. Simplify these radical expressions. Combine like terms if there are any.

(a) $\sqrt[3]{10} \cdot \sqrt[3]{18} \cdot \sqrt[3]{6}$

(b) $\sqrt{10t^2y^3} \cdot \sqrt{2t^5y^5}$

(c) $\sqrt{9(r-3)^3}$

(d) $\dfrac{\sqrt{36x^5y}}{\sqrt{3x^3}}$

(e) $\sqrt[3]{\dfrac{-8}{pq^5}}$

(f) $\sqrt{2}(5\sqrt{2} - 3\sqrt{5}) + \sqrt{5}(1 + \sqrt{2})$

(g) $\sqrt{18} - 5\sqrt{2}$

4. Fill in the blanks:

(a) $\sqrt[4]{5} \cdot \square = 5$

(b) $(x^{\frac{1}{3}})^{\square} = x^{-2}$

5. True or false?

(a) $\sqrt{8+3} \stackrel{?}{=} \sqrt{11}$

(b) $s^{-6} \stackrel{?}{=} \frac{1}{s^6}$

Extra credit.

Find all solutions to $\Big|\big||a+8|-4\big|-2\Big| = 1$. (There are 8 of them!)