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) $\Big|-|-7+3|+1\Big|$

(b) $|2-4-9|-|-12|$

(c) $\sqrt[3]{5}\cdot\sqrt[3]{5}\cdot\sqrt[3]{5}$

(d) $(-8)^{\frac{4}{3}}$

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

(f) $\left(\frac{2}{3}\right)^{-3}$

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) $(p-3)^2 = 9$

(b) $-(3m)^2 + 6 = -30$

(c) $\sqrt{9+u^3} = 1$

(d) $2 \cdot |9 - 5y| = 8$

(e) $-3(z-5)^2 - 6 = 0$

(f) $\sqrt[3]{m^2 - 9} - 1 = -1$

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

(a) $\sqrt[3]{12} \cdot \sqrt[3]{9} \cdot \sqrt[3]{20}$

(b) $\sqrt{5t^5y^9} \cdot \sqrt{10ty^2}$

(c) $\sqrt{4(u+1)^3}$

(d) $\dfrac{\sqrt{16x^5y}}{\sqrt{2x^3}}$

(e) $\sqrt[3]{\dfrac{-27}{p^4q}}$

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

(g) $\sqrt{24} - 3\sqrt{6}$

4. Fill in the blanks:

(a) $\sqrt[3]{2} \cdot \boxed{} = 2$

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

5. True or false?

(a) $\sqrt{5-3} \stackrel{?}{=} \sqrt{2}$

(b) $y^{-2} \stackrel{?}{=} \frac{1}{y^2}$

Extra credit.

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