

Practice Problems
for the Calculus I/Precalculus Placement Test - Fall, 2005

Part 2

1. Evaluate or simplify the following expressions. Express each answer without using negative exponents.

$$\begin{array}{lll} (a) 3^2 + (-4)^3 + (-2)^0 & (b) (-3x)^3 & (c) -4^2 + (-2)^3 \\ (d) (-3)^{-2} & (e) \frac{1}{3^{-2}} & (f) -2x^{-1} \\ (g) \left(\frac{3}{4}\right)^2 & (h) \left(\frac{3}{4}\right)^{-2} & (i) \frac{3^{-2}4^3}{3^34^{-1}} \end{array}$$

2. Simplify each expression. Express each answer without using negative exponents.

$$(a) \frac{3^7}{3^2} \quad (b) \frac{2x^{-3}}{x^{-5}} \quad (c) \frac{x^{-2}y^3}{x^3y^{-1}} \quad (d) \frac{(xy^{-1})^{-2}}{xy^3} \quad (e) \frac{\left(\frac{y^2}{x}\right)^2}{x^{-2}y}$$

3. Simplify radicals and express each answer with rational exponents.

$$\begin{array}{l} \text{a. } \sqrt[3]{8} \\ \text{b. } \sqrt[4]{32a^5} \\ \text{c. } \sqrt{\frac{8x^3}{9y^6}} \\ \text{d. } (xy)^{1/4}(x^2y^2)^{1/2} \\ \text{e. } \left(\frac{x^{1/2}}{y^2}\right)^4 \left(\frac{y^{1/3}}{x^{-2/3}}\right)^3 \\ \text{f. } \sqrt{3x^2} \sqrt{12x^3} \\ \text{g. } \frac{\sqrt{x^2y^4} \sqrt{64x^3y}}{\sqrt{81xy^6}} \\ \text{h. } \sqrt{x} + 2\sqrt{x^3} \\ \text{i. } \sqrt{1-x^2} - \frac{1}{\sqrt{1-x^2}} \end{array}$$

4. Determine whether the expression is a polynomial. If it is, give its degree.

$$(a) 10z^5 - z \quad (b) \pi \quad (c) 2y^3 - \sqrt{2} \quad (d) \sqrt{x} - 2x^2 \quad (e) 2x^2 - \frac{1}{x} \quad (f) x^\pi - 1$$

5. Write the polynomial in standard form.

$$\begin{array}{l} \text{a. } (x^3 + 3x^2 + 2) - (x^2 - 4x + 2) \\ \text{b. } -2(x^2 + x + 1) + 6(x^4 - x) \\ \text{c. } x(x^2 + x - 2) \\ \text{d. } (x + 1)(x^2 + 2x - 4) \\ \text{e. } (2x - 3)(x^2 - x + 1) \\ \text{f. } (x - 1)^2(2x^2 - x - 1) \end{array}$$