**Fall 2005** **Algebra Practice for Enriched Calculus** **Set II**

## Exponents

Laws of Exponents:

$$a^m \bullet a^n = a^{m+n} \qquad (a \bullet b)^n = a^n \bullet b^n$$

$$\frac{a^m}{a^n} = a^{m-n} \qquad \left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

$$\left(a^m\right)^n = a^{m \bullet n} \qquad \left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n$$

Practice Problems:

1. $\dfrac{3^5 2^3}{4^2 3^3}$

2. $\dfrac{1}{3^{-2}} - \dfrac{1}{3} + \dfrac{1}{4^{-1}}$

3. $4^3 \left(\dfrac{1}{4}\right)^2 3^{-4}$

4. $\dfrac{\left(x^2 y^{-3}\right)^2}{\left(y^{-3} x^{-2}\right)^{-2}}$

5. $\dfrac{\dfrac{x^2 y}{x^3}}{\dfrac{x^{-3} y^6}{y^4}}$

6. $\dfrac{\dfrac{1}{x^2} - \dfrac{1}{y^3}}{\dfrac{1}{x^3} + \dfrac{1}{y^2}}$

7. $\left(x^{-1} + y^{-1}\right)^{-1}$

8. $\left(\dfrac{x^{-2}}{x^{-3}}\right)^{-4}$