

NAME: SOLUTIONS

## QUIZ 1

Dawson College

Applied Math (201-943-DW S1)

Date: Aug 27th 2010

Instructor: E. Richer

### Question 1. (2 marks)

Briefly explain the difference between  $(-2)^8$  and  $-2^8$ .

①  $(-2)^8$

Here the base of the exponent is  $(-2)$ , including the negative sign,

we thus have

$$\underbrace{(-2)(-2)(-2)\cdots(-2)}_{8 \text{ times}}$$

Since the exponent is even & 2 negatives multiplied together give a positive, we get

$$(-2)^8 = \boxed{256}$$

②  $-2^8$

The base of the exponent is 2, we could write this as  $-(2^8)$

which gives

$$\boxed{-256}$$

### Question 2. (2 marks)

Briefly explain the difference between  $2x^4$  and  $(2x)^4$

①  $2x^4$

CANNOT be simplified, note that '2' has no exponent

②  $(2x)^4$

$$= (2x)(2x)(2x)(2x)$$

$$= 2^4 x^4$$

$$= \boxed{16x^4}$$

**Question 3. (10 marks)**

Using the laws of exponents, simplify the following expressions. There should be no negative exponents in your final answer.

$$\begin{aligned} \text{(a)} \quad & (2^3x^4)(2^4x^6) \\ & = 2^{3+4}x^{4+6} \\ & = \boxed{2^7x^{10}} \end{aligned}$$

$$\text{(b)} \quad \frac{3}{27x^{-2}} = \frac{3x^2}{27} = \boxed{\frac{x^2}{9}}$$

$$\text{(c)} \quad \frac{5^3x^2y^3}{(5x)^2y^{-4}} = \frac{5^3x^2y^3}{5^2x^2y^{-4}} = 5^{3-2}x^{2-2}y^{3-(-4)} = \boxed{5y^7}$$

$$\text{(d)} \quad (3^{-1}a^2b^{-2})^{-2} = \frac{1}{(3^{-1}a^2b^{-2})^2} = \frac{1}{3^{-2}a^4b^{-4}} = \boxed{\frac{3^2b^4}{a^4}}$$

$$\text{(e)} \quad (7^2x^3y^{-1})^{-1}(7x^3y^{-2}) = \frac{7x^3y^{-2}}{7^2x^3y^{-1}} = \frac{7y}{7^2y^2} = \boxed{\frac{1}{7y}}$$