NAME: SOLUTIONS

QUIZ 1

Applied Mathematics for Electronics Engineering (201-943-DW)
Dawson College, Sept. 2nd 2011
Instructor: E. Richer

Question 1. *(1 mark each)*
Simplify the given expressions. Express results with positive exponents only.

(a) $(-2)^{-2} = \frac{1}{(-2)^2} = \boxed{\frac{1}{4}}$

(b) $-2^{-2} = -\frac{1}{2^2} = \boxed{-\frac{1}{4}}$

(c) $(-y)^{-4} = \frac{1}{(-y)^4} = \boxed{\frac{1}{y^4}}$

(d) $3w^0 = \boxed{3}$

(e) $-(-c^4)^{-4} = -\frac{1}{(-c^4)^4} = \boxed{-\frac{1}{c^{16}}}$

Question 2. *(2 marks each)*
Simplify the given expressions. Express results with positive exponents only.

(a) $\frac{(3t)^{-1}}{3t^{-1}} = \frac{3^{-1}t^{-1}}{3t^{-1}} = \frac{1}{3^2} = \boxed{\frac{1}{9}}$

(b) $\left(\frac{1}{x^{-1}}\right)^{-1} = \boxed{\frac{1}{x}}$

(c) $3a^{-2}(-3a)^2 = 3a^{-2}3^2a^2$
$= 3^3a^0 = \boxed{3^3}$

(d) $\frac{(-5b)^{-2}}{5^{-3}b^2} = \frac{5^3}{(-5b)^2b^2} = \frac{5^3}{5^2b^4} = \boxed{\frac{5}{b^4}}$

(e) $(2a)^{-2}(-2^2a^3) = 2^{-2}a^{-2}(-2^2a^3)$
$= -2^0a$
$= \boxed{-a}$

Question 3. *(5 marks)*

Simplify the given expressions. Express results with positive exponents only.

(a) $\frac{-a^3b^{-4}(ab)^2}{a^2b^{-2}(\frac{1}{ab})}$

$$= \frac{-a^3b^{-4}a^2b^2}{a^2b^{-2}a^{-1}b^{-1}}$$

$$= \frac{-a^5b^{-2}}{ab^{-3}}$$

$$= \boxed{-a^4b}$$

(b) $\frac{(-2x)^{-2}y^3z^3}{(2^2xy)^{-3}(x^{-1}z^2)^2}$

$$= \frac{(-2)^{-2}x^{-2}y^3z^3}{2^{-6}x^{-3}y^{-3}x^{-2}z^4}$$

$$= \boxed{\frac{2^4x^3y^6}{z}}$$