

Last Name: SOLUTIONS

First Name: _____

Student ID: _____

Quiz 1 (B)

Question 1. Simplify the following expressions:

$$\begin{aligned}
 \text{(a) (4 marks)} \quad & \frac{(a^{-2}b^3)^{-4}}{(a^{-3}b^2)^{-2}(ab)^{-4}} = \frac{(a^{-2})^{-4}(b^3)^{-4}}{(a^{-3})^{-2}(b^2)^{-2}a^{-4}b^{-4}} \\
 = & \frac{a^8b^{-12}}{a^6b^{-4}a^{-4}b^{-4}} = \frac{a^8a^4b^4b^4}{a^6b^{12}} = \frac{a^{12}b^8}{a^6b^{12}} \\
 = & \frac{a^6}{b^4}
 \end{aligned}$$

$$\begin{aligned}
 \text{(b) (3 marks)} \quad & \frac{(4x)^{3/2}y^{5/2}}{(xy)^{1/2}} = \frac{4^{3/2}x^{3/2}y^{5/2}}{x^{1/2}y^{1/2}} = \frac{(\sqrt{4})^3x^{3/2}y^{5/2}}{x^{1/2}y^{1/2}} \\
 = & 8x^{3/2-1/2}y^{5/2-1/2} = 8xy^2
 \end{aligned}$$

$$\begin{aligned}
 \text{(c) (3 marks)} \quad & -\sqrt[4]{16x^4y^8} = -(16x^4y^8)^{1/4} \\
 = & -16^{1/4}(x^4)^{1/4}(y^8)^{1/4} \\
 = & -2xy^2
 \end{aligned}$$