

University of Utah
Math 1090, Fall 2009

Name: Key.

Quiz # 1
Time: 10 minutes

Show all work.

Part 1: (4 points) Simplify $\left(\frac{x^{-1}y^2z^{-3}}{4xy^{-1}z^2}\right)^{-2}$.

$$\left(\frac{x^{-1}y^2z^{-3}}{4xy^{-1}z^2}\right)^{-2} = \left(\frac{4xy^{-1}z^2}{x^{-1}y^2z^{-3}}\right)^2 = (4x^2y^{-3}z^5)^2 = 16x^4y^{-6}z^{10}$$

Part 2: (2 points). Find the following roots: (a) $\sqrt{4}$ (b) $\sqrt[3]{-8}$ (c) $\sqrt[4]{-16}$.

(a) $\sqrt{4} = 2$ (because $2 \times 2 = 4$)
(b) $\sqrt[3]{-8} = -2$ (because $(-2) \times (-2) \times (-2) = -8$)
(c) $\sqrt[4]{-16}$ is undefined (not a real number) because even powers of real numbers are ≥ 0 (same reason why $\sqrt{-1}$ is undefined).

Part 3: (4 points) Factor completely $4x^2 - 8x - 12$.

$$4x^2 - 8x - 12 = 4(x^2 - 2x - 3) = 4(x+1)(x-3)$$

either by finding numbers a & b such that $a+b = -2$ and $a \cdot b = -3$
or by using quadratic formula.