Quiz 9 **Name:** Key

Total Points possible: 11 out of 10

Math 12: Spring 2025

Instructions: Show all your work in order to receive credit.

Problem 1. (4 points) Evaluate the following, if there are no real solutions, then say so.

(a) $\sqrt{81}$ $\sqrt{9^2} = 9$

(c) $-\sqrt{81}$ $-\sqrt{9^2} = -9$

(b) $\sqrt{-81}$ not real

(d) $\left(\sqrt{81}\right)^2$ 81

Problem 2. (1.5 points each) Give the domain of the functions.

(a) $f(x) = \sqrt[101]{x}$ odd $(-\infty, \infty)$

(b) $d(x) = \sqrt[20]{x+2}$ even ≥ 0

$\left(\sqrt[20]{x+2}\right)^{20} \geq 0^{20}$

$x+2 \geq 0$

$x \geq -2$

$[-2, \infty)$

Problem 3. (1.5 points each) Simplify the following.

(a) $\sqrt{25x^2}$ $= \sqrt{5^2 x^2} = 5x$

(b) $\sqrt[4]{81x^{12}x^{0}y^{8}}$ $= \sqrt[4]{81\,x^{12}\,y^{8}}$

$x^0 = 1$

$81 = 9 \cdot 9 = 3 \cdot 3 \cdot 3 \cdot 3$

$= \sqrt[4]{3^4 \cdot x^4 \cdot x^4 \cdot x^4 \cdot y^4 \cdot y^4}$

$= 3 \cdot x \cdot x \cdot x \cdot y \cdot y$

$= 3x^3y^2$