

Name: _____

MATH 101

Spring 2024

HW 3: Due 01/31

“And I knew exactly what to do. . . but in a much more real sense, I had no idea what to do.”

— Michael Scott, *The Office*

Problem 1. (10pts) Showing all your work, simplify the following as much as possible (express any denominators using negative powers):

(a) $\frac{x^5y^3}{x^3y^9}$

(b) $\frac{(x^2y^{-3})^4}{x^0y^2}$

(c) $\frac{(x^8y^3)^0xy^7}{(x^2)^3y}$

Problem 2. (10pts) Showing all your work, simplify the following as much as possible (do not express your answer using any negative powers):

(a) $\frac{x^{-2}yz^6}{xy^{-6}z^5}$

(b) $\frac{(xy^{-2})^{-1}}{x^3y^{-7}}$

(c) $\left(\frac{x^5y^{-4}}{(x^{-4}y^3)^{-8}}\right)^0$

Problem 3. (10pts) Showing all your work, simplify the following as much as possible (do not express your answer using any negative powers):

$$\frac{((xyz)^5 xz^{-4})^2 x^{-5}}{xy^{-3}z^{-2}}$$