

Name: \_\_\_\_\_

MATH 101

Fall 2022

HW 2: Due 09/19

*"I do not have time for this; I do not  
have time for you!"*

*—Anna Delvey, Inventing Anna*

**Problem 1.** (10pt) Showing all your work, find the exact value of the following—being sure to simplify as much as possible:

(a)  $(-2)^3 \cdot 3^{-2}$

(b)  $\left(-\frac{9}{5}\right)^{-2}$

(c)  $\frac{(2^3)^2 \cdot 5^0}{4^3 \cdot 3^{-1}}$

**Problem 2.** (10pt) Showing all your work, find the exact value of the following—being sure to simplify as much as possible:

(a)  $\sqrt{300}$

(b)  $\sqrt{2^5 \cdot 3^2 \cdot 5^3}$

(c)  $\sqrt[3]{2^4 \cdot 3^5 \cdot 5^6}$

**Problem 3.** (10pt) Showing all your work, simplify the following as much as possible—being your answer involves no negative powers:

(a)  $(x^0y^3)^2 \cdot (x^4y^{-5})^{-2}$

(b)  $\frac{x^4y^0z^6}{(xz^2)^{-3}}$

(c)  $\left( \frac{x^6y^{-3}z}{(xz^2)^3y^{-5}} \right)^{-2}$

**Problem 4.** (10pt) Showing all your work, simplify the following as much as possible—being your answer involves no negative powers and all variables appear only once:

(a)  $xy\sqrt{x^4y^5}$

(b)  $\frac{\sqrt{x^{10}y^5}}{\sqrt{x^2y^3}}$

(c)  $\sqrt[3]{x^{12}y^3z^{11}}$

**Problem 5.** (10pt) Showing all your work, simplify the following as much as possible—being your answer involves no negative powers and all variables appear only once:

(a)  $(y\sqrt{x})^4 \cdot (x^{-3}y^2)^{-1}$

(b)  $(x\sqrt{y}) \cdot (y\sqrt[3]{x})$

(c)  $\left( \frac{x\sqrt{y^5}}{y^2\sqrt{x^6}} \right)^{-1/2}$

**Problem 6.** (10pt) Showing all your work, simplify the following as much as possible—being your answer involves no negative powers and all variables appear only once:

(a)  $\sqrt[3]{x^3y^2} \cdot \sqrt{xy^3}$

(b)  $\left(\frac{x^5}{\sqrt{x}}\right)^{2/3}$

(c)  $xy \left(\sqrt{\frac{x^2}{y^3}}\right)^{-4}$