Name: *Caleb McWhorter — Solutions*
MATH 101
Fall 2023
HW 4: Due 09/20

"I'm not afraid of hard work. I just don't like it."
–Bob Belcher, Bob's Burgers

Problem 1. (10pt) Showing all your work, compute the following "without a calculator":

(a) $\sqrt[4]{256}$

(b) $\sqrt[3]{-125}$

(c) $\left(\frac{49}{36}\right)^{-1/2}$

(d) $\sqrt{\frac{1}{2}}$

(e) $216^{2/3}$

Problem 2. (10pt) Showing all your work and completely justifying your reasoning, estimate $\sqrt[4]{101}$ without a calculator.

Problem 3. (10pt) Simplify the following:

(a) $\sqrt{\dfrac{(xy^2)^3}{xy^{-8}}}$

(b) $\left(\dfrac{x^9y^{-1}(xy^5)^2}{x^{-1}y}\right)^{-1/2}$

(c) $\left(\sqrt[3]{\dfrac{xy(x^{-3}y^5)^{-2}}{x^{-2}y^5}}\right)^{-2}$

Problem 4. (10pt) Simplify the following:

(a) $\dfrac{10}{\sqrt{72}}$

(b) $\sqrt{300}$

(c) $\sqrt[3]{360}$

(d) $\sqrt{2^{10} \cdot 3^5 \cdot 5^2 \cdot 11^3}$

(e) $\sqrt[5]{2^{12} \cdot 3^9 \cdot 5^1 \cdot 7^5}$