Follow all directions. This assignment is to be completed in pencil and with all work shown in the space provided. Unless otherwise specified, give exact answers. Box your final answer. Work that is unreadable will be counted as incorrect.

1. Simplify each expression, assuming that variables can represent any real numbers.

   (a) $\sqrt{25n^2}$

   (b) $\sqrt[3]{\dfrac{v^3}{-8}}$

   (c) $\left(\dfrac{4}{25}\right)^{\frac{-3}{2}}$

   (d) $-144^{\frac{3}{2}}$

2. Use properties of exponents to simplify. Answer in exponential form without negative exponents.

   (a) $(2n^2 p^{\frac{-2}{5}})^5$

   (b) $(2x^{\frac{-1}{4}} y^{\frac{3}{4}})^4$

   (c) $\dfrac{\sqrt[3]{72b^5}}{\sqrt[3]{3b^2}}$

3. **Challenge Question!** Find a quick way to simplify the expression without the aid of a calculator.

$$\left(\left(\left(\left(\left(3^{\frac{5}{6}}\right)^{\frac{3}{2}}\right)^{\frac{4}{5}}\right)^{\frac{3}{4}}\right)^{\frac{2}{5}}\right)^{\frac{10}{3}}$$

<u>Hint:</u> Use exponent rules!