

Name: _____

Date: _____

Learning Goal 5.2

Use exponent laws to evaluate expression with positive and negative rational exponents.

AssignmentEvaluate the following expressions **without a calculator**. Leave your answers as fractions.

a. $\frac{7^4}{7^6} = \frac{1}{49}$

b. $2^6 \times 2^{-9} = \frac{1}{8}$

c. $(0.25)^{-4} = 256$

d. $\left(-\frac{4}{3}\right)^{-2} = \frac{9}{16}$

e. $(-4)^7 \times (-4)^{-5} = 16$

f. $(6^{-9})^0 = 1$

g. $\frac{6^{-6}}{6^{-5}} = \frac{1}{6}$

h. $((-2)^{-2})^{-4} = 256$

i. $((-3)^2)^{-2} = \frac{1}{81}$

Simplify the following expressions to a single power with only positive exponents. Do not evaluate. Show all your work.

a. $\left(-\left(\frac{w^{-3}}{w^3}\right)^2\right)^{-8} = w^{96}$

b. $(-(z^4 \times z^{-10})^3)^{-2} = z^{36}$

c. $-\left(\frac{r^{-9}}{r}\right)^{-6} = -r^{60}$

d. $(125^{-9} \times 5^4)^{-3} = 5^{69}$

e. $((((23)^{-7} \times 23^{-2})^{-3})^2 = 23^{54}$

f. $\left(\frac{243^2}{-27^{-5}}\right)^{-7} = -\frac{1}{3^{175}}$