

1. Simplify, leaving your answer in exponent form with only positive exponents. Show work.

a)  $(w^7)^2$  Answer:  $w^{14}$   
 $w^{7 \cdot 2}$

b)  $w^{-1} = \frac{1}{w}$  Answer:  $\frac{1}{w}$

c)  $(500)^0$  Answer:  $1$

d)  $c^8 \cdot c^4$  Answer:  $c^{12}$   
 $c^{8+4}$

e)  $\frac{a^{-4}}{a^7}$  Answer:  $\frac{1}{a^{11}}$   
 $a^{-4-7} = a^{-11}$

f)  $\frac{3 \cdot 24x^3 y^8}{2 \cdot 16x^4 y^{-3}}$  Answer:  $\frac{3y^{11}}{2x^3}$   
 $\frac{3}{2} x^{-3} y^{11}$

g)  $8a^9 \cdot 4a^{-17}$  Answer:  $\frac{32}{a^8}$   
 $(8 \cdot 4)(a^{9+(-17)})$   
 $32a^{-8}$

h)  $(3x^6)^2 \cdot (4x^{-8})^2$  Answer:  $\frac{144}{x^4}$   
 $9x^{12} \cdot 16x^{-16}$   
 $144x^{-4}$

i)  $(2x^5y)^3$  Answer:  $8x^{15}y^3$   
 $8x^{15}y^3$

j)  $\frac{c^7}{c \cdot (c^2)^2} = \frac{c^7}{c \cdot c^4}$  Answer:  $c^2$   
 $= \frac{c^7}{c^5}$

k)  $\left(\frac{2x^2}{3y^{-4}}\right)^4$  Answer:  $\frac{16x^8y^{16}}{81}$   
 $\frac{16x^8}{81y^{-16}}$

2. Fill in the blanks for each problem.

a)  $\sqrt[3]{8} = 2$  because  $2 \cdot 2 \cdot 2 = 8$

b)  $\sqrt{49} = 7$  because  $7 \cdot 7 = 49$

c)  $4 = \sqrt[3]{64}$

d)  $\sqrt[4]{x} = x^{\frac{1}{4}}$  (fraction exponent)

3. Evaluate. Show your work. Answers only will not get any credit. (Yes, these are fractional exponents.)

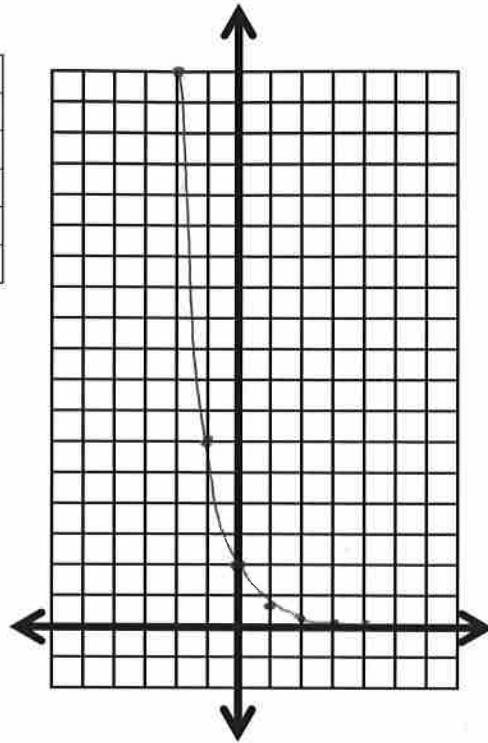
a)  $125^{\frac{1}{3}}$  Answer:  $5$   
 $(\sqrt[3]{125})^1$

b)  $4^{\frac{3}{2}}$  Answer:  $8$   
 $(\sqrt{4})^3$

c)  $8^{\frac{5}{3}}$  Answer:  $32$   
 $(\sqrt[3]{8})^5$

4. Using a chart, graph  $y = 2 \cdot \left(\frac{1}{3}\right)^x$

x	y
2	$\frac{2}{9}$
1	$\frac{2}{3}$
0	2
-1	6
-2	18



The scale is 1...do NOT change the scale!