

Sec 4.4:

1. Evaluate each power without using a calculator.

a) $1000^{\frac{1}{3}}$

10

b) $0.25^{\frac{1}{2}}$

0.5

c) $(-8)^{\frac{1}{3}}$

-2

d) $\left(\frac{16}{81}\right)^{\frac{1}{4}}$

 $\frac{2}{3}$

2. a) Write $26^{\frac{2}{5}}$ in radical form. $(\sqrt[5]{26})^2$

b) Write $\sqrt{6^5}$ and $(\sqrt[4]{19})^3$ in exponent form.

 $6^{\frac{5}{2}}$ $19^{\frac{3}{4}}$

3. Evaluate.

a) $0.01^{\frac{3}{2}}$

0.001

b) $(-27)^{\frac{4}{3}}$

81

c) $81^{\frac{3}{4}}$

27

d) $0.75^{1.2}$

0.708065633

4. Use the formula $b = 0.01m^{\frac{2}{3}}$ to estimate the brain mass of a moose with a body mass of 512 kg.

$$b = 0.64 \text{ kg}$$

Sec 4.5:

6. Evaluate each power.

a) 7^{-2}

 $\frac{1}{49}$

b) $\left(\frac{10}{3}\right)^{-3}$

 $\frac{27}{1000}$

c) $(-1.5)^{-3}$

 $-\frac{1}{3.375} = -0.\overline{296}$

7. Evaluate each power without using a calculator.

a) $16^{-\frac{5}{4}}$

 $\frac{1}{32}$

b) $\left(\frac{25}{36}\right)^{-\frac{1}{2}}$

 $\frac{6}{5}$

8. Use the formula $v = 0.155s^{\frac{5}{3}}f^{-\frac{7}{6}}$ to estimate the speed of a dinosaur when $s = 1.5$ and $f = 0.3$.

$$v = 1.24$$

Sec 4.6:

9. Simplify by writing as a single power.

a) $0.8^2 \cdot 0.8^{-7}$

$$\frac{1}{0.8^5}$$

b) $\left[\left(-\frac{4}{5} \right)^2 \right]^{-3} \div \left[\left(-\frac{4}{5} \right)^4 \right]^{-5}$

$$\left(-\frac{4}{5} \right)^{14}$$

c) $\frac{(1.5^{-3})^{-5}}{1.5^5}$

$$1.5^{10}$$

d) $\frac{9^{\frac{5}{4}} \cdot 9^{\frac{1}{4}}}{9^{\frac{3}{4}}}$

$$9^{\frac{1}{4}}$$

10. Simplify.

a) $m^4 n^{-2} \cdot m^2 n^3$

$$m^6 n$$

b) $\frac{6x^4 y^{-3}}{14xy^2}$

$$\frac{3x^3}{7y^5}$$

11. Simplify.

a) $(25a^4 b^2)^{\frac{3}{2}}$

$$125a^6 b^3$$

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

$$\frac{x^2}{y}$$

c) $\frac{12x^{-5} y^{\frac{5}{2}}}{3x^{\frac{1}{2}} y^{-\frac{1}{2}}}$

$$\frac{4y^3}{x^{\frac{11}{2}}}$$

d) $\left(\frac{50x^2 y^4}{2x^4 y^7} \right)^{\frac{1}{2}}$

$$\frac{5}{xy^2}$$