

# POWER UP

#10 Pg. 242

a)  $1.5^{3/2} \times 1.5^{1/2}$

$$\frac{3}{2} + \frac{1}{2} = \frac{4}{2}$$
$$= 2$$

$$1.5^2$$
$$= 2.25$$

b)  $\left(\frac{3}{4}\right)^{3/4} \cdot \left(\frac{3}{4}\right)^{5/4}$

$$\left(\frac{3}{4} + \frac{5}{4} = \frac{8}{4}\right)$$
$$= 2$$

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

$$(-0.6)^{\frac{1}{3}} \times (-0.6)^{\frac{5}{3}}$$

$$\frac{1}{3} + \frac{5}{3} = \frac{6}{3} = 2$$

$$(-0.6)^2 = +0.36$$

$$\left(\frac{4}{5}\right)^{\frac{4}{3}} \times \left(\frac{4}{5}\right)^{-\frac{4}{3}}$$

$$\frac{4}{3} + -\frac{4}{3} = \frac{0}{3} = 0$$

$$\left(\frac{4}{5}\right)^0 = 1$$

$$\frac{0.6^{\frac{1}{2}}}{0.6^{\frac{3}{2}}}$$

$\frac{1}{2} - \frac{3}{2} = -\frac{2}{2}$   
 $= -1$

$$0.6^{-1}$$

$$= \frac{1}{0.6}$$

$$= 1.\bar{7}$$

$$\frac{\left(-\frac{3}{8}\right)^{\frac{2}{3}}}{\left(-\frac{3}{8}\right)^{-\frac{1}{3}}}$$

$\frac{2}{3} + \frac{1}{3} = \frac{3}{3}$   
 $= 1$

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

$$= -0.375$$

$$\frac{0.49^{5/2}}{0.49^4}$$

$$\frac{5}{2} - \frac{4 \times 2}{1 \times 2}$$

$$\frac{5}{2} - \frac{8}{2} = -\frac{3}{2}$$

$$0.49^{-3/2}$$

$$\left(\frac{49}{100}\right)^{-3/2}$$

$$\left(\frac{100}{49}\right)^{3/2}$$

$\leftarrow$  exp  
 $\leftarrow$  root

$$\frac{(\sqrt{100})^3}{(\sqrt{49})^3}$$

$$\frac{10^3}{7^3}$$

$$\frac{1000}{343}$$

$$\frac{0.027^{5/3}}{0.027^{4/3}}$$

$$0.027^{1/3}$$

$$\frac{5}{3} - \frac{4}{3} = \frac{1}{3}$$

$$\left(\frac{27}{1000}\right)^{1/3}$$

$$\frac{\sqrt[3]{27}}{\sqrt[3]{1000}}$$

$$\frac{3}{10}$$

#11.

a)  $(x^{-1}y^{-2})^{-3}$   
 $= x^3y^6$

b)  $(2^{-2}a^4b^2)^{-2}$   
 $2^{-2}a^4b^{-4}$   
 $\frac{a^4}{2^2b^4}$   
 $= \frac{a^4}{4b^4}$

c)  $(4m^2n^3)^{-3}$   
 $4^{-3}m^{-6}n^{-9}$   
 $\frac{1}{4^3m^6n^9}$   
 $\frac{1}{64m^6n^9}$

$$\begin{aligned} \text{d)} \quad & \left( \frac{3^1 m^{-2} n^{-3}}{2^1} \right)^{-4} \\ & \frac{3^{-4} m^8 n^{12}}{2^{-4}} \\ & \frac{2^4 m^8 n^{12}}{3^4} \\ & \frac{16 m^8 n^{12}}{81} \end{aligned}$$

$$14. \ a) \ \frac{(a^2 b^{-1})^{-2}}{(a^{-3} b^1)^3}$$
$$\frac{a^{-4} b^2}{a^{-9} b^3}$$
$$= a^5 b^{-1}$$
$$= \frac{a^5}{b^1}$$

$-4 + 9 = 5$   
 $2 + -3 = -1$



$$b) \left( \frac{(c^{-3}d^1)^{-1}}{c^2d^1} \right)^{-2}$$

$$3-2=1$$

$$-1+1=-2$$

$$-1+1$$

$$\left( \frac{c^3d^{-1}}{c^2d^1} \right)^{-2}$$

$$(c^1d^{-2})^{-2}$$

$$c^{-2}d^4$$

$$= \frac{d^4}{c^2}$$

16. a)  $m^{\frac{2}{3}} \times m^{\frac{4}{3}}$

$\frac{2}{3} + \frac{4}{3} = \frac{6}{3}$   
 $= 2$   
 $m^2$

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

$-\frac{3}{2} + \frac{1}{4}$   
 $-\frac{6}{4} + \frac{1}{4} = -\frac{5}{4}$   
 $x^{-\frac{5}{4}}$   
 $\frac{1}{x^{\frac{5}{4}}}$

c)

$$\frac{-9a^{-4}b^{\frac{3}{4}}}{3a^2b^{\frac{1}{4}}}$$

$$-3a^{-6}b^{\frac{1}{2}}$$

$$= -\frac{3b^{\frac{1}{2}}}{a^6}$$

$$\begin{array}{r} -4 - 2 \\ -4 + -2 = -6 \\ \hline \frac{3}{4} - \frac{1}{4} = \frac{2}{4} \\ = \frac{1}{2} \end{array}$$

$$d) \left( \frac{-64c^6}{a^9 b^{-1/2}} \right)^{1/3}$$

$$= \frac{(-64)^{1/3} c^2}{a^3 b^{-1/6}}$$

$$= \frac{(-64)^{1/3} c^2 b^{1/6}}{a^3}$$

$$= \frac{-4c^2 b^{1/6}}{a^3}$$

$$\frac{6}{1} \times \frac{1}{3} = \frac{6}{3}$$

$$= 2$$

$$\frac{9}{1} \times \frac{1}{3} = \frac{9}{3}$$

$$= 3$$

$$-\frac{1}{2} \times \frac{1}{3} = -\frac{1}{6}$$