

## Exercise 2C

1b.  $(2^3)^{\frac{1}{3}} = 2$

d.  $(2^5)^{\frac{1}{5}} = 2$

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

h.  $(7^2)^{-\frac{1}{2}} = \frac{1}{7}$

j.  $(-3^3)^{\frac{1}{3}} = -3$

2c.  $(2^{-2})^{-2} = 2^4 = 16$

d.  $(2^2)^{-\frac{1}{2}} = \frac{1}{2}$

e.  $(2^{-2})^{-\frac{1}{2}} = 2$

f.  $(2^{-2})^{\frac{1}{2}} = \frac{1}{2}$

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

3d.  $(3^3)^{\frac{4}{3}} = 3^4 = 81$

f.  $(2^5)^{\frac{3}{5}} = 2^3 = 8$

h.  $(2^2)^{\frac{5}{2}} = 2^5 = 32$

k.  $(\frac{27}{8})^{\frac{2}{3}} = \left[ \left( \frac{3}{2} \right)^3 \right]^{\frac{2}{3}} = \left( \frac{3}{2} \right)^2 = \frac{9}{4}$

l.  $(\frac{9}{4})^{-\frac{1}{2}}$   
 $= \left( \frac{4}{9} \right)^{\frac{1}{2}} = \frac{2}{3}$

4c.  $6c^{\frac{1}{2}} \times 4^{\frac{1}{2}} c^{\frac{1}{2}}$   
 $= 12c^{\frac{1}{2} + \frac{1}{2}} = 12c^1$

e.  $2^6 x^3 y^2 \times 2^{-4} x y^3$   
 $= 2^2 x^4 y^5$

f.  $(\frac{242}{3e})^{\frac{1}{5}} = 8^{\frac{1}{5}} = 2$

h.  $2^{\frac{3}{2}} m^{\frac{2}{3}} n^{\frac{1}{4}} \times 8^{\frac{1}{2}} m^{\frac{1}{2}} n^{\frac{2}{3}}$   
 $= 2^{\frac{3}{2}} \times (2^3)^{\frac{1}{2}} \times m^{\frac{2}{3} + \frac{1}{2}} \times n^{\frac{1}{4} + \frac{2}{3}}$   
 $= 2^2 m^{\frac{7}{6}} n^{\frac{11}{12}}$

i.  $(2x^2 y^{-1})^{-\frac{1}{4}} = \frac{(8x^{-1} y^2)^{\frac{1}{2}}}{(8x^{-1} y^2)^{-\frac{1}{2}}}$   
 $= \frac{2^{\frac{3}{2}} x^{-\frac{1}{2}} y}{2^{\frac{3}{2} - \frac{1}{2}} x^{-\frac{1}{2} - \frac{1}{2}} y^{1 + \frac{1}{2}}}$   
 $= \frac{2^{\frac{3}{2}} x^{-\frac{1}{2}} y}{2^1 x^{-1} y^{\frac{3}{2}}} = \frac{2^{\frac{1}{2}} y^{\frac{1}{2}}}{x}$

5a.  $x^{\frac{1}{2}} = 8$

$$[x^{\frac{1}{2}}]^2 = [8]^2$$

$$x = 64$$

b.  $x^{\frac{1}{3}} = 3$

$$x = 3^3 = 27$$

c.  $[x^{\frac{2}{3}}]^{\frac{3}{2}} = [4]^{\frac{3}{2}}$

$$x = 2^3 = 8$$

d.  $[x^{\frac{3}{2}}]^{\frac{2}{3}} = [27]^{\frac{2}{3}}$

$$x = 3^2 = 9$$

e.  $[x^{-\frac{2}{3}}]^{\frac{3}{2}} = [8]^{\frac{3}{2}}$

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

f.  $[x^{-\frac{2}{3}}]^{\frac{3}{2}} = [9]^{-\frac{3}{2}}$

$$x = 3^{-3} = \frac{1}{27}$$

g.  $x^{\frac{3}{2}} = x\sqrt{2} \div x$

$$x^{\frac{3}{2} - 1} = \sqrt{2}$$

$$[x^{\frac{1}{2}}]^2 = [2^{\frac{1}{2}}]^2$$

$$x = 2$$

h.  $x^{\frac{3}{2}} = 2 \cdot x^{\frac{1}{2}} \div x^{\frac{1}{2}}$

$$x = 2$$

8a.  $2^{2x} = 2^5$

$$2x = 5$$

$$x = \frac{5}{2}$$

b.  $3^{2y} = 3^{-3}$

$$2y = -3$$

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

c.  $2^{4z} = 2^1$

$$4z = 1$$

$$z = \frac{1}{4}$$

d.  $10^{2x} = 10^3$

$$2x = 3$$

$$x = \frac{3}{2}$$

e.  $2^{3y} = 2^4$

$$3y = 4$$

$$y = \frac{4}{3}$$

f.  $2^{3z} = 2^{-7}$

$$3z = -7$$

$$z = -\frac{7}{3}$$

g.  $2^{3t} \times 2^{2t-2} = 2^4$

$$2^{3t+2t-2} = 2^4$$

$$5t = 4+2$$

$$t = \frac{6}{5}$$

h.  $\frac{3^{2y}}{(3^y)^{2y+1}} = 3^4$

$$2y - 6y - 3 = 4$$

$$3 = 3$$

$$-4y - 3 = 4$$

$$4y = -7$$

$$y = -\frac{7}{4}$$