

1 Simplify:

a $x^3 \div x^{-2}$

b $x^5 \div x^7$

c $x^{\frac{3}{2}} \times x^{\frac{5}{2}}$

d $(x^2)^{\frac{3}{2}}$

e $(x^3)^{\frac{5}{3}}$

f $3x^{0.5} \times 4x^{-0.5}$

g $9x^{\frac{2}{3}} \div 3x^{\frac{1}{6}}$

h $5x^{\frac{7}{5}} \div x^{\frac{2}{5}}$

i $3x^4 \times 2x^{-5}$

j $\sqrt{x} \times \sqrt[3]{x}$

k $(\sqrt{x})^3 \times (\sqrt[3]{x})^4$

l $\frac{(\sqrt[3]{x})^2}{\sqrt{x}}$

2 Evaluate, without using your calculator:

a $25^{\frac{1}{2}}$

b $81^{\frac{3}{2}}$

c $27^{\frac{1}{3}}$

d 4^{-2}

e $9^{-\frac{1}{2}}$

f $(-5)^{-3}$

g $(\frac{3}{4})^0$

h $1296^{\frac{3}{4}}$

i $(\frac{25}{16})^{\frac{3}{2}}$

j $(\frac{27}{8})^{\frac{2}{3}}$

k $(\frac{6}{5})^{-1}$

l $(\frac{343}{512})^{-\frac{2}{3}}$

3 Simplify:

a $(64x^{10})^{\frac{1}{2}}$

b $\frac{5x^3 - 2x^2}{x^5}$

c $(125x^{12})^{\frac{1}{3}}$

d $\frac{x + 4x^3}{x^3}$

e $\frac{2x + x^2}{x^4}$

f $(\frac{4}{9}x^4)^{\frac{3}{2}}$

g $\frac{9x^2 - 15x^5}{3x^3}$

h $\frac{5x + 3x^2}{15x^3}$

(E) 4 a Find the value of $81^{\frac{1}{4}}$. (1 mark)

b Simplify $x(2x^{-\frac{1}{3}})^4$. (2 marks)

(E) 5 Given that $y = \frac{1}{8}x^3$, express each of the following in the form kx^n , where k and n are constants.

a $y^{\frac{1}{3}}$ (2 marks)

b $\frac{1}{2}y^{-2}$ (2 marks)