

1 Simplify these expressions:

a $x^3 \times x^4$

b $2x^3 \times 3x^2$

c $\frac{k^3}{k^2}$

d $\frac{4p^3}{2p}$

e $\frac{3x^3}{3x^2}$

f $(y^2)^5$

g $10x^5 \div 2x^3$

h $(p^3)^2 \div p^4$

i $(2a^3)^2 \div 2a^3$

j $8p^4 \div 4p^3$

k $2a^4 \times 3a^5$

l $\frac{21a^3b^7}{7ab^4}$

m $9x^2 \times 3(x^2)^3$

n $3x^3 \times 2x^2 \times 4x^6$

o $7a^4 \times (3a^4)^2$

p $(4y^3)^3 \div 2y^3$

q $2a^3 \div 3a^2 \times 6a^5$

r $3a^4 \times 2a^5 \times a^3$

2 Expand and simplify if possible:

a $9(x - 2)$

b $x(x + 9)$

c $-3y(4 - 3y)$

d $x(y + 5)$

e $-x(3x + 5)$

f $-5x(4x + 1)$

g $(4x + 5)x$

h $-3y(5 - 2y^2)$

i $-2x(5x - 4)$

j $(3x - 5)x^2$

k $3(x + 2) + (x - 7)$

l $5x - 6 - (3x - 2)$

m $4(c + 3d^2) - 3(2c + d^2)$

n $(r^2 + 3t^2 + 9) - (2r^2 + 3t^2 - 4)$

o $x(3x^2 - 2x + 5)$

p $7y^2(2 - 5y + 3y^2)$

q $-2y^2(5 - 7y + 3y^2)$

r $7(x - 2) + 3(x + 4) - 6(x - 2)$

s $5x - 3(4 - 2x) + 6$

t $3x^2 - x(3 - 4x) + 7$

u $4x(x + 3) - 2x(3x - 7)$

v $3x^2(2x + 1) - 5x^2(3x - 4)$

3 Simplify these fractions:

a $\frac{6x^4 + 10x^6}{2x}$

b $\frac{3x^5 - x^7}{x}$

c $\frac{2x^4 - 4x^2}{4x}$

d $\frac{8x^3 + 5x}{2x}$

e $\frac{7x^7 + 5x^2}{5x}$

f $\frac{9x^5 - 5x^3}{3x}$