Pure Mathematics 2   Solution Bank   Ⓟ Pearson

Exercise 1A

1 a $\dfrac{4x^4 + 5x^2 - 7x}{x}$

$= \dfrac{4x^4}{x} + \dfrac{5x^2}{x} - \dfrac{7x}{x}$

$= 4x^3 + 5x - 7$

b $\dfrac{7x^5 - 5x^5 + 9x^3 + x^2}{x}$

$= \dfrac{7x^5}{x} - \dfrac{5x^5}{x} + \dfrac{9x^3}{x} + \dfrac{x^2}{x}$

$= 7x^4 - 5x^4 + 9x^2 + x$

c $\dfrac{-x^4 + 4x^2 + 6}{x}$

$= \dfrac{-x^4}{x} + \dfrac{4x^2}{x} + \dfrac{6}{x}$

$= -x + 4x + \dfrac{6}{x}$

d $\dfrac{7x^5 - x^3 - 4}{x}$

$= \dfrac{7x^5}{x} - \dfrac{x^3}{x} - \dfrac{4}{x}$

$= 7x^4 - x^2 - \dfrac{4}{x}$

e $\dfrac{8x^4 - 4x^3 + 6x}{2x}$

$= \dfrac{8x^4}{2x} - \dfrac{4x^3}{2x} + \dfrac{6x}{2x}$

$= 4x^3 - 2x^2 + 3$

f $\dfrac{9x^2 - 12x^3 - 3x}{3x}$

$= \dfrac{9x^2}{3x} - \dfrac{12x^3}{3x} - \dfrac{3x}{3x}$

$= 3x - 4x^2 - 1$

g $\dfrac{7x^3 - x^4 - 2}{5x}$

$= \dfrac{7x^3}{5x} - \dfrac{x^4}{5x} - \dfrac{2}{5x}$

$= 3x - 4x^2 - 1$

h $\dfrac{-4x^2 + 6x^4 - 2x}{-2x}$

$= \dfrac{-4x^2}{-2x} + \dfrac{6x^4}{-2x} - \dfrac{2x}{-2x}$

$= 2x - 3x^3 + 1$

i $\dfrac{-x^8 + 9x^4 - 4x^3 + 6}{-2x}$

$= -\dfrac{x^8}{-2x} + \dfrac{9x^4}{-2x} - \dfrac{4x^3}{-2x} + \dfrac{6}{-2x}$

$= \dfrac{x^7}{2} - \dfrac{9x^3}{2} + 2x^2 - \dfrac{3}{x}$

j $\dfrac{-9x^9 - 6x^6 + 4x^4 - 2}{-3x}$

$= \dfrac{-9x^9}{-3x} - \dfrac{6x^6}{-3x} + \dfrac{4x^4}{-3x} - \dfrac{2}{-3x}$

$= 3x^8 + 2x^5 - \dfrac{4x^3}{3} + \dfrac{2}{3x}$

2 a $\dfrac{(x+3)(x-2)}{(x-2)} = x + 3$

b $\dfrac{(x+4)(3x-1)}{(3x-1)} = x + 4$

c $\dfrac{(x+3)^2}{(x+3)} = \dfrac{(x+3)(x+3)}{(x+3)} = x + 3$

d $\dfrac{x^2 + 10x + 21}{(x+3)} = \dfrac{(x+7)(x+3)}{(x+3)} = x + 7$

e $\dfrac{x^2 + 9x + 20}{(x+4)} = \dfrac{(x+4)(x+5)}{(x+4)} = x + 5$

f $\dfrac{x^2 + x - 12}{(x-3)} = \dfrac{(x-3)(x+4)}{(x-3)} = x + 4$

g $\dfrac{x^2 + x - 20}{x^2 + 2x - 15} = \dfrac{(x+5)(x-4)}{(x+5)(x-3)} = \dfrac{x-4}{x-3}$

h $\dfrac{x^2+3x+2}{x^2+5x+4}=\dfrac{(x+2)(x+1)}{(x+4)(x+1)}=\dfrac{x+2}{x+4}$

i $\dfrac{x^2+x-12}{x^2-9x+18}=\dfrac{(x+4)(x-3)}{(x-6)(x-3)}=\dfrac{x+4}{x-6}$

j $\dfrac{2x^2+7x+6}{(x-5)(x+2)}=\dfrac{(2x+3)(x+2)}{(x-5)(x+2)}=\dfrac{2x+3}{x-5}$

k $\dfrac{2x^2+9x-18}{(x+6)(x+1)}=\dfrac{(2x-3)(x+6)}{(x+6)(x+1)}=\dfrac{2x-3}{x+1}$

l $\dfrac{3x^2-7x+2}{(3x-1)(x+2)}=\dfrac{(3x-1)(x-2)}{(3x-1)(x+2)}=\dfrac{x-2}{x+2}$

m $\dfrac{2x^2+3x+1}{x^2-x-2}=\dfrac{(2x+1)(x+1)}{(x-2)(x+1)}=\dfrac{2x+1}{x-2}$

n $\dfrac{x^2+6x+8}{3x^2+7x+2}=\dfrac{(x+4)(x+2)}{(3x+1)(x+2)}=\dfrac{x+4}{3x+1}$

o $\dfrac{2x^2-5x-3}{2x^2-9x+9}=\dfrac{(2x+1)(x-3)}{(2x-3)(x-3)}=\dfrac{2x+1}{2x-3}$

3 $6x^3+3x^2-84x=3x\left(2x^2+x-28\right)$

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

$6x^2-33x+42=3\left(2x^2-11x+14\right)$

$=3(x-2)(2x-7)$

$\dfrac{6x^2+3x^2-84x}{6x^2-33x+42}=\dfrac{3x(2x-7)(x+4)}{3(x-2)(2x-7)}$

$=\dfrac{x(x+4)}{(x-2)}$

$a=1,\ b=4,\ c=-2$