Functions

Part A

(1)

    f(x) = 2x + a

    g(x) = ax + 3

    fg(x) = 10x + b

    where 'a' and 'b' are constants

    work out the values of 'a' and 'b'

(2)

    f(x) = dx – e

    g(x) = ex – 1

    fg(x) = 18x – 11

    where 'd' and 'e' are constants

    work out the values of 'd' and 'e'

(3)

    f(x) = hx + k

    g(x) = kx + h

    fg(x) = 20x + 14

    where 'k' and 'h' are constants

    work out the values of 'k' and 'h'

(4)

    f(x) = mx – n

    g(x) = nx + m

    gf(x) = 12x – 13

    where 'm' and 'n' are constants

    work out the values of 'm' and ''

(5)

    f(x) = vx + w

    g(x) = 2vx + 2w

    gf(x) = 18x + 16

    work out two values for each of 'v' and 'w'

(6)

    f(x) = 2x + p

    g(x) = px + 3

    gf(x) = 2px + 5p – 1

    work out two values for 'p'

Part B

Show that $fg(x) = gf(x)$ for each of the following cases.

(1) $f(x) = 3x + 2$

       $g(x) = 6x + 5$

(2) $f(x) = 1\frac{1}{2}x + 6$

       $g(x) = 1\frac{1}{4}x + 3$

Part C

In general:

$$f(x) = ax + b$$

$$g(x) = cx + d$$

where a, b, c and d are constants, what relationship is there between the four constants if $fg(x) = gf(x)$?

Can you make up some further examples and test whether your rule works?