



1. The functions f and g are defined as,

$$f(x) = x^2, \text{ for all real values of } x$$
$$g(x) = \frac{1}{x+2}, \text{ for all real values of } x, x \neq -2$$

a. Find $fg(x)$

(1)

b. Solve the equation $fg(x) = 4$

(3)

2. The functions f and g are defined with their respective domains by,

$$f(x) = \sqrt{x-2} \text{ for } x \geq 2$$
$$g(x) = \frac{1}{x} \text{ for real values of } x, x \neq 0$$

a. Find $fg(x)$

(1)

b. Solve the equation $fg(x) = 1$

(3)

Solutions

1a.

$fg(x) = \frac{1}{(x+2)^2}$	M1
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1b.

$\frac{1}{(x+2)^2} = 4$ $(x+2)^2 = \frac{1}{4}$	M1
$x+2 = \pm \frac{1}{2}$	M1
$x = \frac{1}{2} - 2, x = -\frac{3}{2}$ $x = -\frac{1}{2} - 2, x = -\frac{5}{2}$	M1

2a.

$fg(x) = \sqrt{\frac{1}{x} - 2}$	M1
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2b.

$\frac{1}{x} - 2 = 1$	M1
$\frac{1}{x} = 3$	M1
$x = \frac{1}{3}$	M1

