1 $f(x) = 2x - 3$ and $g(x) = x^2$

Show that $f^{-1}(55) = fg(4)$

[4 marks]

2 (a) $g(x) = 2x$ and $h(x) = \dfrac{x-1}{2}$

Circle the expression for $hg(x)$

[1 mark]

$\dfrac{2x^2 - x}{2}$ $\dfrac{2x-1}{2}$ $x^2 - x$ $x - 1$

3 $f(x) = 2x + 5$

Show that $3f(x) - 12f^{-1}(x)$ simplifies to an integer.

[4 marks]

4 $f(x) = 3x$ and $g(x) = x^2$

Circle the expression for $fg(x)$

[1 mark]

$3x^2$ $9x^2$ $3x^3$ $9x^4$

5 $f(x) = x^2 + 6x$

$g(x) = 2x + 4$

5 (a) Show that $fg(x) = 4x^2 + 28x + 40$

[3 marks]

5 (b) Solve $fg(x) = -5$

[3 marks]

Answer _____

6 $f(x) = \frac{3x+9}{5}$ and $g(x) = 6x - 1$

6 (a) Show that gf(2) is an integer.

[2 marks]

6 (b) Show that $f^{-1}(8)$ is **not** an integer.

[2 marks]

7 $f(x) = x - 3$ $g(x) = 4x - 7$

7 (a) Work out the value of fg(6)

[2 marks]

Answer _____

7 (b) Solve $(f(x))^2 = g(x)$

[4 marks]

Answer _____