

Al Moattasem International School

Jubail

Level 9 – Revision Work Sheet - 4

Chapter 8

Topic - Functions

Answer Key

1) Solution

1(a) The function is $h(x) = x^2 - 4$ so

$$\begin{aligned}h(1) &= (1)^2 - 4 \\ &= 1 - 4 \\ &= -3\end{aligned}$$

1(b) The function is $h(x) = x^2 - 4$ so

$$\begin{aligned}h(-2) &= (-2)^2 - 4 \\ &= 4 - 4 \\ &= 0\end{aligned}$$

1(c) The function is $h(x) = x^2 - 4$ so

$$\begin{aligned}h(0) &= (0)^2 - 4 \\ &= 0 - 4 \\ &= -4\end{aligned}$$

1(d) The function is $g(x) = 10x + 5$ so

$$\begin{aligned}g(3) &= 10 \times (3) + 5 \\ &= 30 + 5 \\ &= 35\end{aligned}$$

1(e) The function is $g(x) = 10x + 5$ so

$$\begin{aligned}g(-1) &= 10 \times (-1) + 5 \\ &= -10 + 5 \\ &= -5\end{aligned}$$

1(f) If $h(x) = 12$ then since $h(x) = x^2 - 4$,

$$\begin{aligned}x^2 - 4 &= 12 \\ x^2 &= 4 + 12 \\ &= 16 \\ x &= \pm 4\end{aligned}$$

2) Solution

- (a) $f(2) = 2 \times 2 + 3 = 7$
- (b) $f(-3) = 2 \times (-3) + 3 = -6 + 3 = -3$
- (c) $g(0) = 3 - (0)^2 = 3$
- (d) $g(4) = 3 - (4)^2 = 3 - 16 = -13$

3)

Solution The function can also be written as $h(x) = x^2 - 9$ and if x maps to zero then $h(x) = 0$, i.e.

$$\begin{aligned}x^2 - 9 &= 0 \\x^2 &= 9\end{aligned}$$

since squaring both 3 and -3 gives the value 9.

4) Solution

(a) $x \rightarrow$ multiply by 3 $\xrightarrow{3x}$ subtract 2 $\xrightarrow{3x-2}$ square $\xrightarrow{(3x-2)^2}$

(b) $x \rightarrow$ multiply by 4 $\xrightarrow{4x}$ subtract 2 $\xrightarrow{4x-2}$ divide by 3 $\xrightarrow{\frac{4x-2}{3}}$

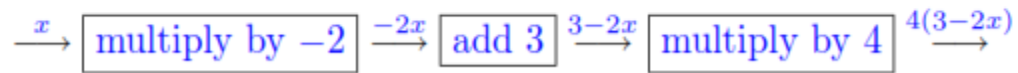
5a) Solution

For $h : x \mapsto 6x + 1$ the flow diagram is

$$x \rightarrow \text{multiply by 6} \xrightarrow{6x} \text{add 1} \xrightarrow{6x+1}$$

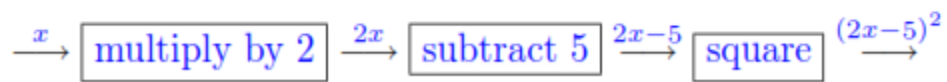
5b) Solution

For $h : x \mapsto 4(3 - 2x)$ the flow diagram is



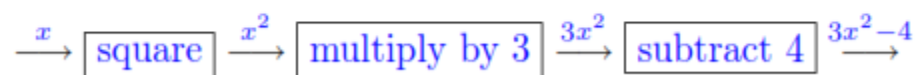
5c) Solution

For $h : x \mapsto (2x - 5)^2$ the flow diagram is



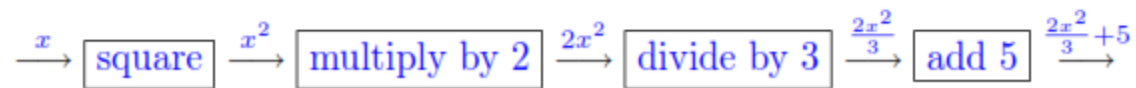
5d) Solution

For $g : x \mapsto 3x^2 - 4$ the flow diagram is



5e) Solution

For $g : x \mapsto \frac{2x^2}{3} + 5$ the flow diagram is



5f) Solution

For $g : x \mapsto \sqrt{x^2 + 2}$ the flow diagram is

