

U2D2 MCR 3UI **Worksheet Function Notation**

1. Write in function notation.

a) $y = 5x - 3$ b) $C = 45n - 200$ c) $W = 15h$ d) $A = 4\pi r^2 - 12r + 2$

2. Write as an equation with two variables.

a) $f(x) = 2x + 9$ b) $g(t) = 5t^3$ c) $h(x) = x^2 - 4x + 7$

3. Evaluate each of the following.

Given: $f(x) = 2x + 9$, $g(t) = 5t^3$, $h(x) = x^2 - 4x - 7$, $j(x) = x^4$

a) Find $f(0.5)$ b) Find $g(-3)$ c) Find $h(0)$ d) Find $j(\sqrt{3})$ e) Find $j(m)$

f) Find t , if $g(t) = 40$ g) Find x , if $f(x) = 0$ h) Find $g\left(\frac{x}{4}\right)$ i) Find $h(x - 2)$

j) $f(4) - h(3)$ k) Find $j(-2a)$

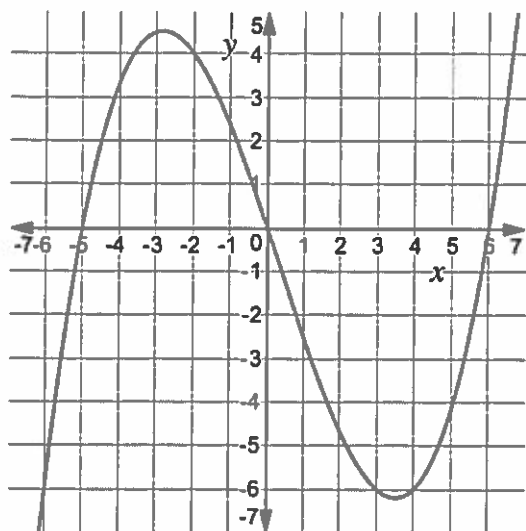
l) Find x if $h(x) = f(x)$ NOTE: You will learn to do questions like this, later this unit.

[CHALLENGE: Find $f(j(x))$ This Challenge is optional – you will do these in grade 12!]

4. Write ordered pairs that represent each of the following.

a) $k(2) = -7$ b) $g(-5) = 4$ c) $f(1) = -1$ d) $k(0) = 50$

5. Given this graph of $f(x)$,



Find:

a) $f(-2)$ b) $f(0)$ c) $f(5)$

d) x when $f(x) = -6$ e) x when $f(x) = 0$

Answers:

1. a) $f(x) = 5x - 3$ b) $C(n) = 45n - 200$ c) $W(h) = 15h$ d) $A = 4\pi r^2 - 12r + 2$

2. a) $y = 2x + 9$ b) $y = 5t^3$ c) $h = x^2 - 4x + 7$

3. a) $f(0.5) = 10$ b) $g(-3) = -135$ c) $h(0) = -7$ d) $j(\sqrt{3}) = 9$e) $j(m) = m^4$

f) $t = 2$ g) $x = \frac{-9}{2}$ h) $g\left(\frac{x}{4}\right) = \frac{5x^3}{64}$ i) $h(x - 2) = x^2 - 8x + 5$ j) $f(4) - h(3) = 27$

k) $j(-2a) = 16a^4$ l) $x = -2$ or $x = 8$ Challenge: $f(j(x)) = 2x^4 + 9$

4. a) $(2, -7)$ b) $(-5, 4)$ c) $(1, -1)$ d) $(0, 50)$

5. a) a) $f(-2) = 4$ b) $f(0) = 0$ c) $f(5) = -4$ d) $x = -6, 3, \text{ or } 4$ e) $x = -5, 0, \text{ or } 6$

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1. a) $f(x) = 5x - 3$ b) $C(n) = 45n - 200$

c) $w(h) = 15h$ d) $A(r) = 4\pi r^2 - 12r + 2$

2. a) $y = 2x + 9$ b) $y = 5t^3$ c) $h = x^2 - 4x + 7$

3 a) $f(0.5) = 2(0.5) + 9$ b) $g(-3) = 5(-3)^3$
 $f(0.5) = 1 + 9$ $g(-3) = 5(-27)$
 $f(0.5) = 10$ $g(-3) = -135$

c) $h(0) = 0^2 - 4(0) - 7$ d) $j(\sqrt{3}) = (\sqrt{3})^4$
 $h(0) = -7$ $j(\sqrt{3}) = 9$

e) $j(m) = m^4$ f) $g(t) = 40$ g) $f(x) = 0$
 $5t^3 = 40$ $2x + 9 = 0$
 $t^3 = 8$ $2x = -9$
 $t = \sqrt[3]{8}$ $x = \frac{-9}{2}$
 $t = 2$

h) $g\left(\frac{x}{4}\right) = 5\left(\frac{x}{4}\right)^3$ (i) $h(x-2) = (x-2)^2 - 4(x-2) - 7$ OR 4.5
 $g\left(\frac{x}{4}\right) = \frac{5x^3}{64}$ $h(x-2) = x^2 - 4x + 4 - 4x + 8 - 7$
 $h(x-2) = x^2 - 8x + 5$

j) $f(4) - h(3) = 2(4) + 9 - [3^2 - 4(3) - 7]$
 $f(4) - h(3) = 8 + 9 - (9 - 12 - 7)$
 $f(4) - h(3) = 17 - (-10)$
 $f(4) - h(3) = 27$

k) $j(-2a) = (-2a)^4$
 $j(-2a) = (-2)^4(a)^4$
 $j(-2a) = 16a^4$

l) $h(x) = f(x)$
 $x^2 - 4x - 7 = 2x + 9$
 $x^2 - 6x - 16 = 0$ m+16, A-6
 $(x-8)(x+2) = 0$ -8, 2
 $x = 8$ OR $x = -2$

Challenge (a) $f(j(x))$
 $= 2(x^4) + 9$
 $= 2x^4 + 9$

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4. a) $k(a) = -7$
 $(2, -7)$ b) $g(-5) = 4$
 $(-5, 4)$ c) $f(1) = -1$
 $(1, -1)$ d) $k(a) = 50$
 $(0, 50)$

5. a) $f(-2) = 4$ b) $f(0) = 0$ c) $f(5) = -4$

d) when $f(x) = -6$,
 $x = -6, 3, \text{ or } 4$

e) when $f(x) = 0$,
 $x = -5, 0, \text{ or } 6$