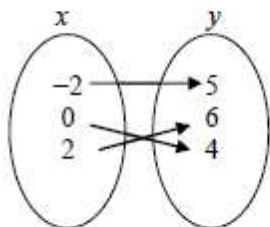


MATHEMATICS
GRADE 9 (ACCLERATED)
RELATIONS & FUNCTIONS
Worksheet #1

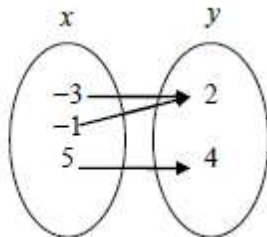
Determine the type of relation in each of the following and hence state if the relation is a function

1. $\{(3,4), (4,-6), (5,-7), (3,2), (-2,5)\}$ 2. $\{(-4,6), (-3,2), (1,0), (7,6), (8,2)\}$ 3. $\{(-3,4), (-2,5), (0,0), (-2,5), (4,8)\}$

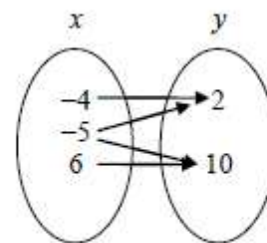
4.



5.



6.



Use $(x) = 2x + 7$, $g(x) = 3x^2 - 5$, $h(x) = \frac{8-3x}{5+2x}$ for questions 7 to 9

7. Find:

- a. $g(-2)$
- b. $gh(0)$
- c. $-4g(-2) + gg(-2) - fg(-2)$

8. Find $gf(x)$ and $hf(x)$ and **hence** find:

- a. $gf(3)$, $hf(-1)$

9. Find $f^{-1}(x)$ and $h^{-1}(x)$ and **hence** find:

- a. $(fh)^{-1}(x)$
- b. $h^{-1}(3)$
- c. x such that $h(x) = 3$

Remember "HENCE" means that you **MUST** use the previous parts to find what it now required

Evaluate each function

10. If $h(x) = 2^x$. Find:

- a. $h(3)$
- b. x such that $h(x) = \frac{1}{\sqrt{8}}$
- c. x such that $h^{-1}(x) = -2$ **[HINT: You can't find the inverse of this function, so use the original function]**

11. For what value of x are $f(x) = 4x + 9$ and $g(x) = x^2 + 13$ equivalent?

12. The height in meters of a projectile at t seconds can be found by the function $h(t) = -4.9t^2 + 60t + 1.2$. Find the height of the projectile 4 seconds after it is launched.?

At what time is the projectile at a height of 101.6 metres? Comment on your answers.