

PART B.

1 a) Create three fns f, g, h such that:

$$f \circ g \circ h(x) = \sqrt{\frac{2}{x-1}} + 17$$

by performing the computation. Justify your answer

$$f(x) = x + 17$$

$$g(x) = \sqrt{\frac{2}{x}}$$

$$h(x) = x - 1$$

$$f(x) = x + 17$$

$$f \circ g \circ h(x) = f(g \circ h(x))$$

$$= f\left(\sqrt{\frac{2}{x-1}}\right)$$

$$= \sqrt{\frac{2}{x-1}} + 17$$

$$g(x) = \sqrt{\frac{2}{x}}, \quad h(x) = x - 1$$

$$g \circ h(x) = g(h(x))$$

$$g(x-1)$$

$$= \sqrt{\frac{2}{x-1}}$$

How

Values of the functions

$$f(x) = x + 17$$

$$g(x) = \sqrt{\frac{2}{x}}$$

$$h(x) = x - 1$$

b) Find another completely different set of possible f, g, h such $f \circ g \circ h(x) = \sqrt{\frac{2}{x-1}} + 17$

$$f(x) = x + 10$$

$$f \circ g \circ h(x) = f(g \circ h(x))$$

$$= f\left(\sqrt{\frac{2}{x-1}} + 17\right)$$

$$= \sqrt{\frac{2}{x-1}} + 7 + 10$$

$$g(h(x)) = \sqrt{\frac{2}{x-6}} \cdot 7h(x) = x+5$$

$$g \circ h(x) = g(h(x)) = g(x+5)$$

$$= \sqrt{\frac{2}{x+5+6}} + 7$$

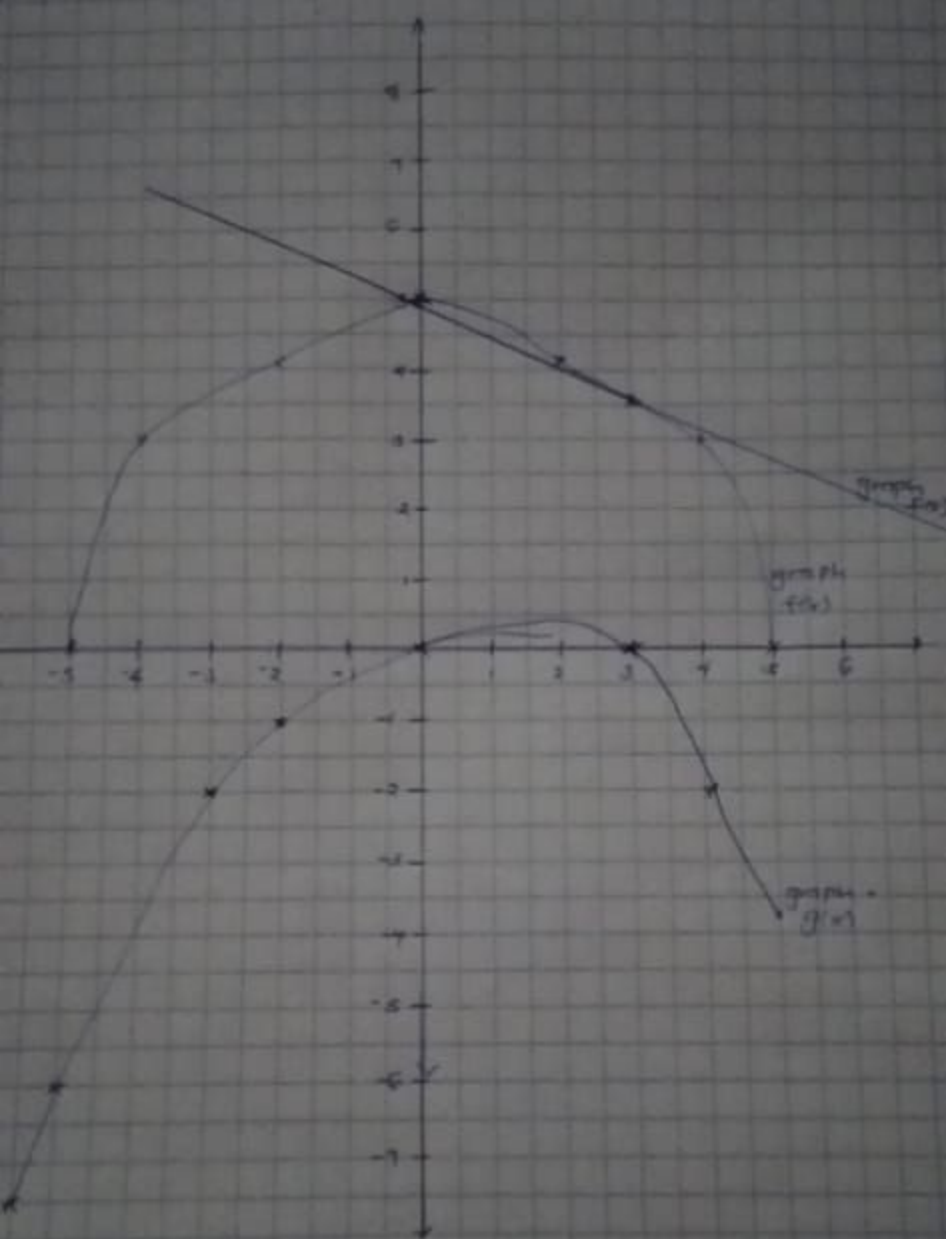
$$= \sqrt{\frac{2}{x+11}} + 7$$

Then the functions are:

$$f(x) = x+10$$

$$g(x) = \sqrt{\frac{2}{x-6}} + 7$$

$$h(x) = x+5$$



A

$$b) y = f(x) - g(x)$$

$$f(x) = (\sqrt{25-x^2}) - (-\frac{x}{3} - 3.81)$$

$$y = \sqrt{25-x^2} + \frac{x}{3} + 3.81$$

4	x =	-2	-1	0	1	2
7		-1.059	-0.431	0	0.232	0.249

And then make the graph below.

B

PART A-

a) Create and graph $g(x) = ax + b$, $a \neq 0, b \neq 0$
At $x=0$.

Yes. How $x^2 + y^2 = 25$

$$x^2 + y^2 = 25$$

$$y^2 = 25 - x^2$$

$$y = \sqrt{25 - x^2}$$

$$f(x) = \sqrt{25 - x^2}$$

Then pick any 2 random points on the graph

$$(x, y) = ($$

$$\text{Slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (-4.3, 2.6) & (-2.6, 4.3) \\ (4.6, 1.9) & \end{matrix}$$

$$= \frac{4.3 - 2.6}{-2.6 - -4.3} = \frac{1.7}{1.7} = 1$$

How come Point is valid.

$$\frac{(4.3 - 1.9) - (2.6 - 4.6)}{-2.6 - -4.3} = \frac{2.4}{-1.7} = -\frac{1}{3}$$

for How $g(x) = -\frac{1}{3}x + c$
Pick a random point on the graph as a to make the equation complete.

$$(1.74, 4.42) (x, y)$$

$$\frac{(7 - 4.42) = -\frac{1}{3}}{(x - 1.74)} = 37 + 13.26 = -x + 1.74$$

$$37 = -x + 1.74 - 13.26$$

$$37 = -11.52 - x$$

$$x = -3.81 - \frac{1}{3}$$

But

$$y = mx + c \text{ How}$$

$$7 = -\frac{x}{3} - 3.8$$

$$g(x) = -\frac{x}{3} - 3.81$$