MCR3U – Fall 2023 – Mckay
Unit 1 Summative

Name:_____
Date:_____

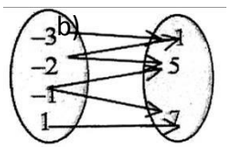
Please record your responses to the multiple-choice questions below:

1)	2)	3)	4)	5)

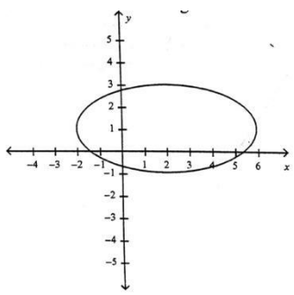
6) State whether each relation is a function. Explain your reasoning **[1 Mark Each]**

a) $\{(1, 4),\ (2, 6),\ (3, 8),\ (4, 10),\ (5, 8)\}$

b)



7) For each of the following state the domain and range.**[3 Marks]**

Relation	Domain	Range	Function (Y/N)
$f(x) = \lvert x + 1 \rvert$			
			

8) Answer the following using the functions $f(x) = x^2 - 3x - 1$ and $g(x) = 2x + 5$

a) Find $g^{-1}(x)$. Is the inverse a function? Explain your reasoning and state the domain and range for the inverse. **[4 Marks]**

b) Evaluate the following:

i) $g(3) + g^{-1}(3)$ **[2 Marks]** ii) $f(-2) - g(1)$ **[2 Marks]** iii) $f(a - 2)$ **[2 Marks]**

iv) x when $f(x) = g(x)$ **[3 Marks]**

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Transformations

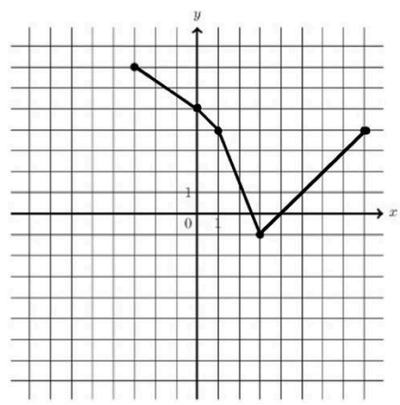
9) The figure below displays the graphs of $y = f(x)$. Express answers in function notation.

a) Determine $f(-3)$ **[1 Mark]**

b) Determine x when $f(x) = 4$ **[1 Mark]**

c) Write the mapping statement for $y = \frac{1}{2}f[(x + 3)] - 2$

Mapping Statement: _____ **[2 Marks]**



Produce the new graph based on the transformations. **[2 Marks]**

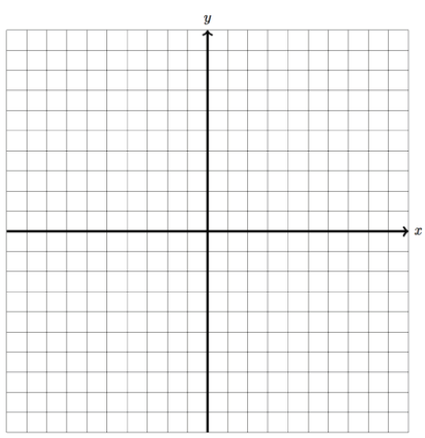
10) For the following functions, name and graph its associated parent function, and then perform the transformation on the key points from the parent function. State the Domain and Range of the final transformed graph **[5 Marks each]**

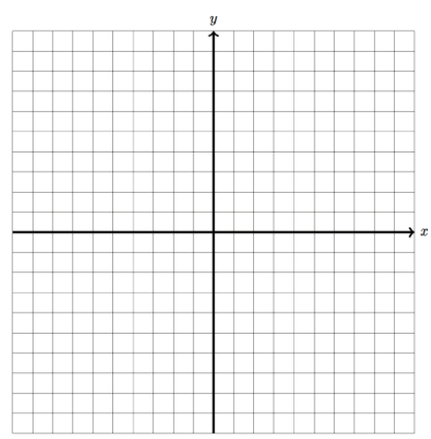
a) $g(x) = -3\sqrt{\frac{1}{2}x + 1} + 2$

Parent Name:_____
D:_____, R:_____
List of Transformations:

b) $g(x) = 2|-2(x + 4)| - 1$

Parent Name:_____
D:_____, R:_____
List of Transformations:





c) Pick ONE of your final transformed functions from a or b. and draw it's inverse on the grid below. **[2 Marks]**