

**Part A: Short Answer (1 Mark Each)**

**Question 1:** Consider the transformation formula:  $y = a[f(b(x - c))] + d$ . What does the b-value do to the graph? \_\_\_\_\_

**Question 2:** Simplifying  $e^{2\ln(3)} + \log_4 12 - \log_4 3 + 3\log_2 1$  produces:

- a) 3                      b) 7                      c) 10                      d) 11                      e) 14

**Question 3:** Given  $f(x) = x^2 + 1$  and  $g(x) = 2x - 3$ , the simplified equation for  $f \circ g(x + 1)$

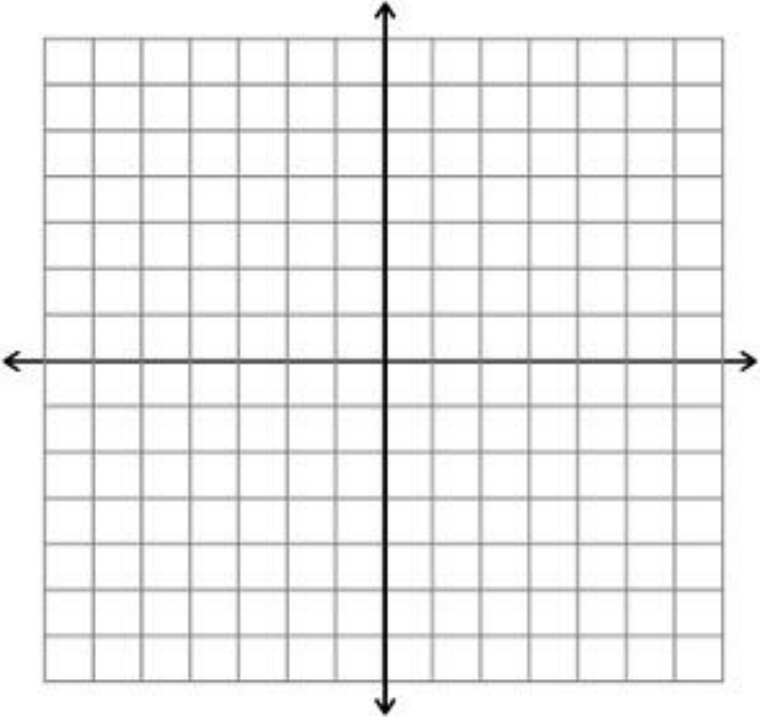
- a)  $4x^2 - 12x + 10$                       b)  $4x^2 - 8x + 5$                       c)  $2x^3 - 3x^2 + 2x - 2$                       d)  $4x^2 - 4x + 2$

**Question 4:** State the change of base formula to change  $\log_2 x$  into an expression that only has  $\log_5$

**Question 5:** Write the following function as a piecewise function:  $g(x) = |x|$

**Part B: Short Answer Choice (Show all work)**

**Question 1:** Using the grid below, answer the questions that are given:

	<p>a) Provide a graph for the following piecewise function: (3 Marks):</p> $f(x) = \begin{cases} 2x + 5 & x < -3 \\ (x + 1)^2 + 2 & -3 \leq x < 0 \\ \log_2 x & x > 0 \end{cases}$ <p>b) The Domain of this function is: (1 Mark)</p> <p>c) The Range of this function is: (1 Mark)</p>
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**Question 2:** Solve the following equation:  $-e^{-2x+1} + 10 = 8$ . (3 Marks)

**Question 3:** Determine the Domain of the following function:  $f(x) = \sqrt{-2x - 4} + \frac{1}{x^2 - 25}$  (3 Marks)

**Question 4:** Simplify:  $\text{ArcCos}\left(\text{Sin}\left(-\frac{5\pi}{6}\right)\right)$  (4 Marks)

**Question 5:** Determine the inverse of the  $f(x)$ . State if the inverse is a function and how you know if it is a function. If the inverse is not a function, state a restriction on the domain of the **original function  $f(x)$**  so that the inverse will be a function (with the largest domain possible):  $f(x) = -4(x - 3)^2 + 2$  (5 Marks)

**Question 6:** Determine the exact value for  $\text{Sin}\left(\frac{\pi}{12}\right)$  (5 Marks)