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VCE Mathematical Methods ¾ Transformations [1.3]

Test

Results:

Test	/ 13.5
Extension	/6





Section A: Test Questions (13.5 Marks)

INSTRUCTION: 13.5 Marks. 17 Minutes Writing.

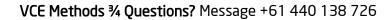


Question 1 (2.5 marks)

Tick whether the following statements are **true** or **false**.

		True	False
a.	The image of a transformation is the point before the transformation is applied.		
b.	When a point undergoes a dilation by a factor 3 from the <i>y</i> -axis, we can describe it as $x' = \frac{1}{3}x$.		
c.	The transformation $x' = -2(x - 2)$, indicates a translation of 2 units left, a dilation by a factor 2 from the y-axis and a reflection in the y-axis.		
d.	$y' = 2y + 1$ and $y' = 2\left(y + \frac{1}{2}\right)$ result in the same transformed function.		
e.	The transformation that maps $y = x^2$ to $y = 8x^2$ can be interpreted using either a dilation from the <i>x</i> -axis or the <i>y</i> -axis.		

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Question 2 (2 marks) The series of transformations given by "a dilation by a factor of 5 from the x -axis, reflection in the x -axis, and a		
	slation of 2 units up" yields the same result as the series of transformations given by "a translation by a units a , a reflection in the a -axis, and a dilation by a factor of a from the a -axis." Find the values of a and a .	
-		
-		
-		
3 un	the function $f:[0,\infty) \to R$, $f(x) = \sqrt{x+3}$, the function f is dilated by a factor of $\frac{3}{2}$ from the x -axis, translated that its in the negative x -direction, and then reflected in the y -axis to produce the function g . If the rule for $g(x)$ and state its domain.	
-	the rule for $g(x)$ and state its domain.	
-		
-		
-		
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Question 4 (3 marks)				
Consider the following functions:				
$f(x) = \log_e(x+4)$				
$g(x) = 2\log_e(3x - 1) + 1$				
Find the series of transformations that map $f(x)$ to $g(x)$.				
Question 5 (3 marks)				
The graph of a linear function $y = f(x)$ has an x -intercept at $(2,0)$ and a y -intercept at $(0,-6)$. Find the x and y -intercepts of the graph of $y = 2f(3x)$.				
				
				
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Section B: Extension Test Questions (6 Marks)

INSTRUCTION: 6 Marks. 6 Minutes Writing.

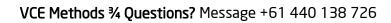


Question 6 (3 marks)

It is known that f(x) has a tangent y = 2x + 3 at x = 3. f(x) has been transformed into g(x), where g(x) = 3f(2x - 1) + 2.

Find the tangent of g(x) at x = 2.

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Question 7 (3 marks)			
Find a sequence of transformations that map the function $f(x) = x^2 - 6x + 13$ to the function $g(x) = 18(x-1)^2 + 10$.			

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