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VCE Mathematical Methods ½ Transformations [2.4]

Test

15 Marks. 19 Minutes Writing.

Results:

/15	
	/ 15





Section A: Test Questions (15 Marks)

Question 1 (3 marks)

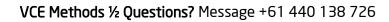
Tick whether the following statements are **true** or **false**.

		True	False
a.	The image of a transformation is the point before the transformation is applied.		
b.	Reflection in the x -axis makes the y value negative of what it was.		
c.	When a point undergoes a dilation by a factor 3 from the <i>y</i> -axis, we can describe it as $x' = 3x$.		
d.	The transformation $x' = 2(x - 2)$, indicates a translation of 2 units left, and a dilation by a factor 2 from the <i>x</i> -axis.		
e.	$y' = 2y + 1$ and $y' = 2\left(y + \frac{1}{2}\right)$ result in the same transformed function.		
f.	A transformation that maps $y = x^2$ to $y = 9x^2$ could be a dilation by factor 3 from 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 3 from the x -axis, followed by a translatio units up", yields the exact same result as the series of transformations given by "a translation by a units up followed by a dilation by a factor of b from the x -axis".	
Find the values of a and b .	
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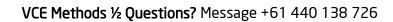




Question 3 (3 marks)		
Consider the following function: $f(x) = (x + 1)^2$ Apply the following transformations below to the function above.		
Dilation by a factor of $\frac{1}{4}$ from the y-axis		
Dilation by a factor of 2 from the <i>x</i> -axis		
Translation by 2 units in the negative direction of the x -axis		
Translation by 9 units in the positive direction of the y-axis		
Reflection in the y-axis		
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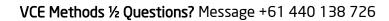


Question 4 (3 marks)
Consider the following functions:
$f(x) = \sqrt{x+2}$
$g(x) = -2\sqrt{7 - 2x} + 3$
Find the set of transformations that maps $f(x)$ to $g(x)$.
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Question 5 (2 marks)	
Consider the following functions:	
$f_1(x) = x^3$	
$f_2(x) = -2(3x+1)^3 - 1$	
Find the set of transformations that maps the function f_1 into f_2 .	
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Question 6 (3 marks)		
For the function $f(x) = \sqrt{x+2}$, the function f is dilated by a factor of $\frac{5}{4}$ from the x -axis, translated 2 units in the negative x -direction and then is reflected in the y -axis to produce the function g .		
Find the rule for $g(x)$.		
<u></u>		
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VCE Mathematical Methods ½

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