

Solomon Practice Paper

Pure Mathematics 5E

Time allowed: 90 minutes

Centre: www.CasperYC.club

Name:

Teacher:

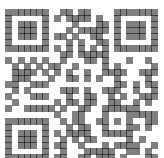
Question	Points	Score
1	4	
2	6	
3	9	
4	9	
5	11	
6	11	
7	11	
8	14	
Total:	75	

How I can achieve better:

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Last updated: May 5, 2023



- 6. (a) Using the definitions of hyperbolic functions in terms of exponential functions, prove that [4]

$$\cosh(x + y) \equiv \cosh(x) \cosh(y) + \sinh(x) \sinh(y).$$

Given that

$$5 \cosh(x) + 4 \sinh(x) \equiv R \cosh(x + \alpha),$$

find

- (b) the value of R , [3]
- (c) the value of α , giving your answer in terms of natural logarithms. [3]
- (d) Hence, or otherwise, state the minimum value of $5 \cosh(x) + 4 \sinh(x)$. [1]

Total: 11

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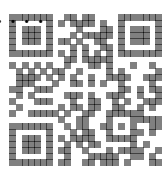
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8. The line with equation $y = mx + c$ is a tangent to the parabola with equation $y^2 = 8x$.

(a) Show that $mc = 2$. [5]

The lines l_1 and l_2 are tangents to both the parabola with equation $y^2 = 8x$ and the circle with equation $x^2 + y^2 = 2$.

(b) Find the equations of l_1 and l_2 . [9]

Total: 14

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