

Solomon Practice Paper

Pure Mathematics 5B

Time allowed: 90 minutes

Centre: www.CasperYC.club

Name:

Teacher:

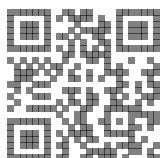
Question	Points	Score
1	7	
2	8	
3	9	
4	11	
5	12	
6	13	
7	15	
Total:	75	

How I can achieve better:

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Last updated: May 5, 2023



2.

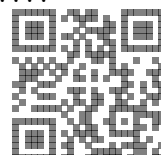
[8]

$$f(x) = 5 \cosh(x) + 3 \sinh(x).$$

The minimum value of $f(x)$ occurs at the point $(p \ln(q), r)$ where p, q and r are integers.

Find the values of p, q and r .

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- 5. (a) Using the definition of $\cosh(x)$ in terms of exponential functions, express $\operatorname{sech}(x)$ in terms of e^x and e^{-x} . [1]
- (b) Sketch the graph of $y = \operatorname{sech}(x)$. [2]
- (c) Show that [4]

$$\int \operatorname{sech}(x) dx = 2 \arctan(e^x) + c.$$

The curve C has equation $y = \operatorname{sech}(x)$. The region between C , the x -axis and the lines $x = -a$ and $x = a$, where a is a positive constant, is rotated through 2π about the x -axis.

- (d) Find the volume of revolution of the solid generated. [4]
- (e) Find the limit of the volume of revolution as $a \rightarrow \infty$. [1]

Total: 12

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