

Solomon Practice Paper

Pure Mathematics 2G

Time allowed: 90 minutes

Centre: www.CasperYC.club

Name:

Teacher:

Question	Points	Score
1	5	
2	7	
3	8	
4	8	
5	8	
6	10	
7	13	
8	16	
Total:	75	

How I can achieve better:

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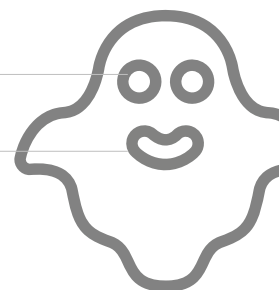
Last updated: July 14, 2025



$$u_{n+1} = \frac{u_n - 1}{2}, \quad n \geq 1.$$

[2]

[3]



[2]

can be rearranged into the form

and state the values of a and b .

[3]

with your values of a and b and with $x_0 = 1$ to find a root of the equation correct to 2 decimal places.

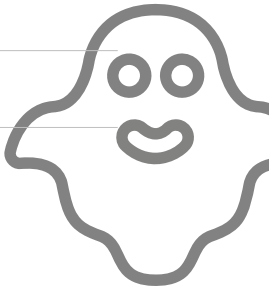
[2]

Total: 7



3. (a) Find the coordinates of the points where the curve $y = 4 - x^2$ crosses the x -axis. [2]
- (b) The region bounded by the curve $y = 4 - x^2$ and the x -axis is rotated through 360° about the x -axis. Show that the volume of the solid generated is $\frac{512}{15}\pi$. [6]

Total: 8



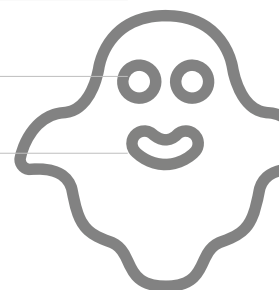
The pressure, P pounds per square inch, in the tyre t minutes after the puncture occurs is given by

(a) Find the pressure in the tyre when the puncture occurs. [2]

(b) the value of the constant k , [4]

(c) the pressure in the tyre 12 minutes after the puncture occurs. [2]

Total: 8



5. The functions f and g are defined by

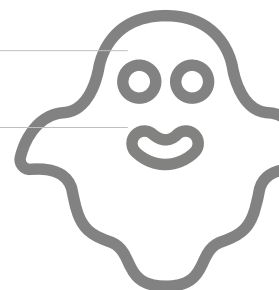
$$\begin{aligned} f: x &\mapsto 3x^2 - 1, & x &\in \mathbb{R}, \\ g: x &\mapsto e^{3x}, & x &\in \mathbb{R}. \end{aligned}$$

(a) Solve the equation $f(x) = 26$. [3]

(b) Evaluate $gf(0.8)$ correct to 3 significant figures. [2]

(c) Define $fg(x)$ as simply as possible. [3]

Total: 8



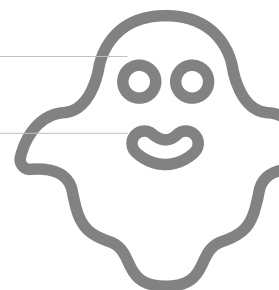
[5]

ii. $\frac{2x^2 - x - 1}{x^2 + 8x - 9}$.

[5]

$$\frac{x^2 + 3x}{x^2 + 5x + 6} = \frac{2x^2 - x - 1}{x^2 + 8x - 9},$$

Total: 10



7. (a) Prove that there are no real values of θ for which [4]

$$\cos(2\theta) + \cos(\theta) + 2 = 0.$$

- (b) Find the values of x in the interval $0 \leq x \leq 360^\circ$, for which [5]

$$3 \sin(x) - 2 \cos^2(x) = 0.$$

- (c) Hence, find the values of y in the interval $0 \leq y \leq 180^\circ$, for which [4]

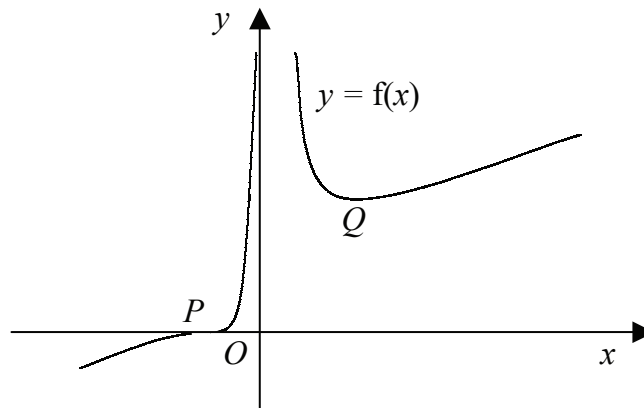
$$3 \sec(2y) - 2 \cot(2y) = 0.$$

Total: 13





8. Figure shows the curve $y = f(x)$ where $f(x) \equiv \frac{(2+x)^3}{x^2}$.



- Express $(2+x)^3$ as a series in ascending powers of x . [2]
- Hence, express $f(x)$ in the form $Ax^{-2} + Bx^{-1} + C + Dx$. [2]

The curve intersects the x -axis at the point P .

- (c) Find the coordinates of P . [2]
- (d) Show that $f(x)$ is stationary at P . [4]
- (e) Hence, find the coordinates of the other stationary point on the curve, Q . [6]

Total: 16

