

Solomon Practice Paper

Pure Mathematics 2G

Time allowed: 90 minutes

Centre: www.CasperYC.club

Name:

Teacher:

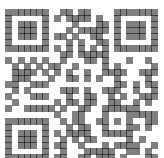
Question	Points	Score
1	5	
2	7	
3	8	
4	8	
5	8	
6	10	
7	13	
8	16	
Total:	75	

How I can achieve better:

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Last updated: May 5, 2023



2. (a) Show that the equation

[2]

$$1 + \cos(x) = 2x^2 - 1$$

can be rearranged into the form

$$x = \pm\sqrt{a + b \cos(x)},$$

and state the values of a and b .

(b) Use the iteration formula

[3]

$$x_{n+1} = \pm\sqrt{a + b \cos(x_n)},$$

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

(c) Without further calculation write down another root of the equation and explain your answer.

[2]

Total: 7

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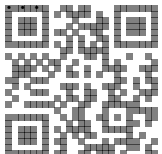
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6. (a) Simplify [5]

i. $\frac{x^2 + 3x}{x^2 + 5x + 6}$,

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

(b) Hence solve the equation [5]

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

giving your answers in the form $a + b\sqrt{2}$.

Total: 10

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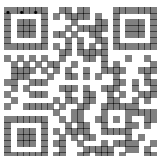
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7. (a) Prove that there are no real values of θ for which [4]

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

(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

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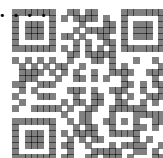
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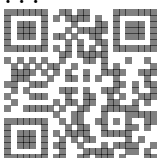
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