

Solomon Practice Paper

Core Mathematics 4E

Time allowed: 90 minutes

Centre: www.CasperYC.club

Name:

Teacher:

Question	Points	Score
1	4	
2	8	
3	9	
4	9	
5	10	
6	10	
7	12	
8	13	
Total:	75	

How I can achieve better:

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Last updated:

December 24, 2025



3. (a) Express

$$\frac{2 + 20x}{1 + 2x - 8x^2}$$

[4]

as a sum of partial fractions.

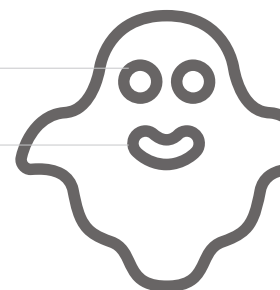
(b) Hence find the series expansion of

[5]

$$\frac{2 + 20x}{1 + 2x - 8x^2}, \quad |x| < \frac{1}{4},$$

in ascending powers of x up to and including the term in x^3 , simplifying each coefficient.

Total: 9



7. (a) Prove that

[3]

$$\frac{d}{dx}a^x = a^x \ln(a).$$

A curve has the equation $4^x - 2^{x-1} + 1$.

(b) Show that the tangent to the curve at the point where it crosses the y -axis has the equation

[5]

$$3x \ln(2) - 2y + 3 = 0.$$

(c) Find the exact coordinates of the stationary point of the curve.

[4]

Total: 12



