

# Solomon Practice Paper

## Pure Mathematics 2E

Time allowed: 90 minutes

Centre: [www.CasperYC.club](http://www.CasperYC.club)

Name:

Teacher:

| Question | Points | Score |
|----------|--------|-------|
| 1        | 6      |       |
| 2        | 7      |       |
| 3        | 7      |       |
| 4        | 9      |       |
| 5        | 9      |       |
| 6        | 11     |       |
| 7        | 12     |       |
| 8        | 14     |       |
| Total:   | 75     |       |

How I can achieve better:

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- 
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Last updated: December 24, 2025









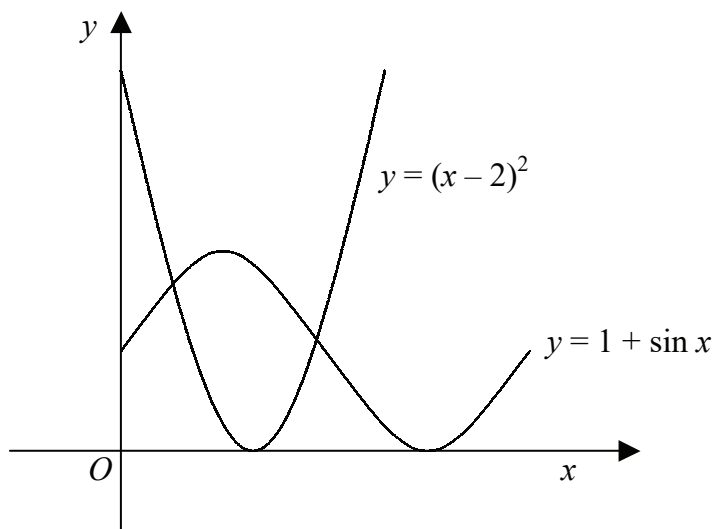








8. Figure shows the curves with equations  $y = (x - 2)^2$  and  $y = 1 + \sin(x)$  where  $x$  is measured in radians.



(a) i. State, with a reason, how many solutions there will be to the equation  $(x - 2)^2 = 1 + \sin(x)$ . [4]

ii. Show that one solution to the equation lies in the interval  $[0.5, 1]$ .

(b) Using the iteration [3]

$$x_{n+1} = \frac{1}{4} (x_n^2 + 3 - \sin(x_n))$$

with a starting value of  $x_1 = 0.75$ , find  $x_4$  correct to 3 significant figures.

(c) Show that your answer to part (b) is correct to 3 significant figures as a solution to the equation  $(x - 2)^2 = 1 + \sin(x)$ . [2]

(d) Using an iteration of the form [5]

$$x_{n+1} = a + \frac{\sin(x_n) - b}{x_n},$$

with a starting value of  $x_1 = 3$ , find another solution of the equation  $(x - 2)^2 = 1 + \sin(x)$  correct to 3 significant figures.

Total: 14

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