

Subject - Math AI(Standard Level)
Topic - Function
Year - May 2021 - Nov 2022
Paper -2
Answers

Question 1

(a) (i) $p(10)^2 + q(10) = 60$

M1

$10p + q = 6$ ($100p + 10q = 60$)

A1

(ii) $p = 1, q = -4$

A1A1

Note: If p and q are both incorrect then award **M1A0** for an attempt to solve simultaneous equations.

(b) $(2, -4)$

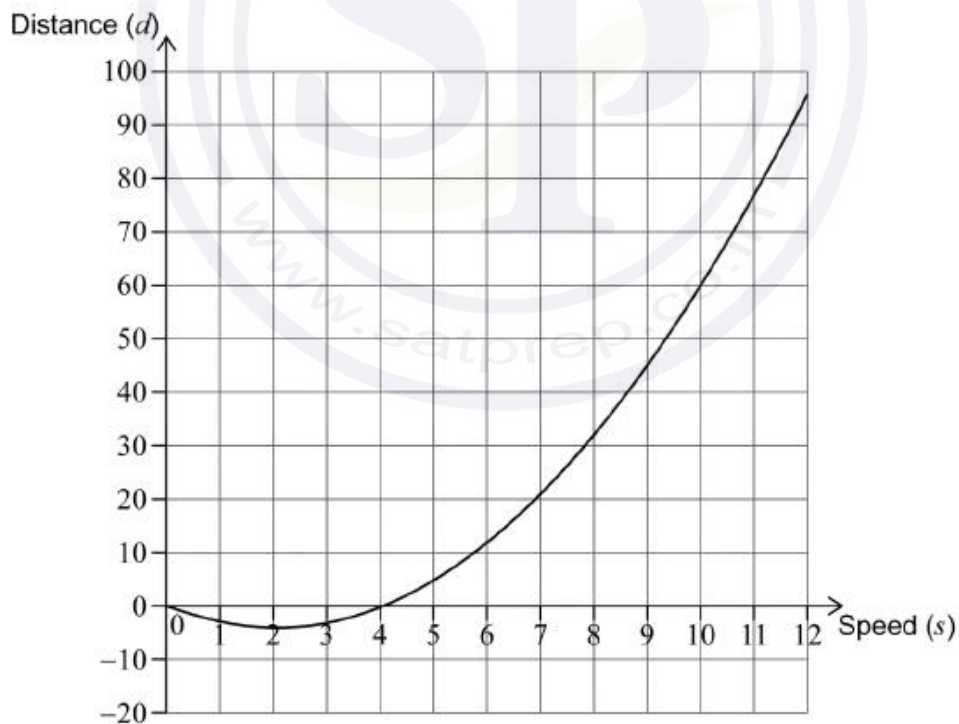
[4 marks]

A1A1

Note: Award **A1** for each correct coordinate.
Award **A0A1** if parentheses are missing.

[2 marks]

(c)



A3

Note: Award **A1** for smooth quadratic curve on labelled axes and within correct window. Award **A1** for the curve passing through (0, 0) and (10, 60). Award **A1** for the curve passing through their vertex. Follow through from part (b).

[3 marks]

(d) the graph indicates there are negative stopping distances (for low speeds) **R1**

Note: Award **R1** for identifying that a feature of their graph results in negative stopping distances (vertex, range of stopping distances...).

[1 mark]

(e) $0.95 \times 20^2 - 3.92 \times 20$
 $= 302(\text{m}) (301.6\dots)$

(M1)

A1

[2 marks]

(f) $\left| \frac{301.6 - 320}{320} \right| \times 100$
 $= 5.75(\%)$

M1

A1

[2 marks]

(g) $330 = 1.6 \times s + 0.95 \times s^2 - 3.92 \times s$

M1A1

Note: Award **M1** for an attempt to find an expression including stopping distance (model B) and reaction distance, equated to 330. Award **A1** for a completely correct equation.

$19.9(\text{ms}^{-1}) (19.8988\dots)$

A1

[3 marks]

Total [17 marks]