

Mock Revision D [48] MARKSCHEME

1.

$$x^2 - y^2$$

$$x^2 + xy - xy - y^2$$

(4 terms seen any 3 correct)

B2

B1

[3]

2.

$$20 \times 10 \times 20 (= 4000)$$

Must be volume calculation not surface area

M1

$$5 \times 5 \times 2 (= 50)$$

Must be volume calculation not surface area

M1

$$\frac{\text{their } 4000}{\text{their } 50}$$

or

$$80 \quad \text{or}$$

$$\frac{(20 \times 10 \times 20) - (70 \times 5 \times 5 \times 2)}{5 \times 5 \times 2}$$

M3 for $4 \times 2 \times 10$

M2 for two of 2, 4 or 10 multiplied together and by another number

M1

10

A1

[4]

3.

(a) Sight of $\frac{10}{30}$

oe anywhere in (a)

B1

Any pair of branches

with $\frac{2}{3}$ and $\frac{1}{3}$

$$\frac{2}{3}$$



$$\frac{1}{3}$$

0.33, (0.66, 0.67 or better)

Accept $\left. \begin{matrix} 0.66 \\ 0.34 \end{matrix} \right\}$ for M marks

M1

All 6 'correct' $\frac{1}{3}$ and $\frac{2}{3}$ probabilities on tree

$$\frac{2}{3}$$



$$\frac{1}{3}$$

$$\frac{2}{3}$$



$$\frac{1}{3}$$

$$\frac{2}{3}$$



$$\frac{1}{3}$$

(ignore snow labels at this stage so one or more probabilities

$\frac{1}{3}$ and $\frac{2}{3}$ could be interchanged)

M1

Fully correct including all "Snow" and "No snow" labels

A1

Check the labels to probs are correct

(b) One correct product $\frac{2}{3} \times \frac{1}{3}$

(or $\frac{2}{9}$)

M1

ft unambiguous probabilities (pairs of probs must sum to 1)

Adding both correct products

$$\left(\frac{2}{3} \times \frac{1}{3}\right) + \left(\frac{1}{3} \times \frac{2}{3}\right)$$

M1 dep

ft unambiguous probabilities (pairs of probs must sum to 1)

$$= \frac{4}{9}$$

A1

Watch for $\frac{2}{3} \times \frac{2}{3} = \frac{4}{9} \Rightarrow M0A0$

$\frac{4}{9}$ with no working = SC1

4.

(a) $x = -1$

M1,A1

*M1 for $2x = -2$
A1 answer cao*

(b) $y = 7.5$

M1,M1,A1

*M1 for $4y - 12 = 18$
M1 for $4y = 30$
A1 answer cao*

(c) $z = 18$

M1,A1

*M1 for $z + 4 = 22$
A1 answer cao*

[7]

5.

$0.5 \times 20 \times 8$ or 80 or 30×8 or 240 or $0.5 \times (50 + 30) \times 8$ or 320	M1	oe Attempt at any part of the area below the graph up to 50s
$0.5 \times (8 + 5) \times 14$ or 91	M1	oe Attempt at area below the graph for time between 50s and 64s
their 80 + their 240 + their 91 or their 320 + their 91 or 411	M1dep	dep on M1 M1 An attempt at total area for 64 seconds
411 and Amina	A1	

6.

$$\frac{60}{15} = \frac{h}{2.7}$$

M2

oe M1 for $\frac{60}{15}$ or $\frac{15}{60}$ or $\frac{2.7}{15}$ or $\frac{15}{2.7}$

10.8

A1

Trig method: $\tan G = \frac{2.7}{15}$ M1 (10.2°)

(h =) $60 \times \tan$ (their 10.2) M1 dep

10.79 or 10.8 A1

[3]

7.

$$\cos A = \frac{11^2 + 10^2 - 9^2}{2 \times 11 \times 10} \quad \text{M1}$$

If other angles found answers are (to 1d.p)
C = 70.5, B = 59.0

$$\cos A = 0.6363.. \quad \text{A1}$$

Mark as scheme with different values

$$A = 50.5^\circ \quad \text{A1}$$

$$\text{Area} = 0.5 \times 10 \times 11 \times \sin 50.5 \quad \text{DM1}$$

$$= 42.43 \text{ cm}^2 \quad \text{A1 ft}$$

[5]

8.

(a)	[At x = 1] -2 [At x = 2] 7 and statement of 'change of sign'	2 1 AO2.2 1 AO2.4a	M1 for attempt to substitute both 1 and 2 into the expression	
(b)	One correct evaluation between 1 and 2	M1	Allow any correct systematic sign-change method e.g. decimal search or interval bisection	1.1 -1.469
	Two correct evaluations, between 1 and 2, one which gives a positive value and the other giving a negative value	M1		1.2 -0.872
(b)	A correct evaluation at 1.35 or any value between 1.32 and 1.35 which gives a positive value	M1	Dependent on achieving M2	1.3 -0.203
	1.3	A1 3 AO1.3b 1 AO2.4a		1.4 0.544
				1.5 1.375
				1.6 2.296
				1.7 3.313
				1.8 4.432
				1.9 5.659
				1.35 0.160375

9.

$$(a) \quad (i) \quad \sqrt{20} = \sqrt{4 \times 5} (=2\sqrt{5}) \quad \text{B1}$$

must show $\sqrt{4 \times 5}$ since answer given

$$(ii) \quad 2 + \sqrt{2}\sqrt{10} + \sqrt{2}\sqrt{10} + 10 \quad \text{M1}$$

oe e.g. $2 + 2\sqrt{20} + 10$ or $\sqrt{4} + \sqrt{2}\sqrt{10} + \sqrt{2}\sqrt{10} + \sqrt{100}$
allow one error

$$12 + 2\sqrt{20} \text{ or } 12 + 4\sqrt{5} \quad \text{A1}$$

$$(b) \quad (2 + \sqrt{5})^2 + (\sqrt{3})^2 \quad \text{oe} \quad \text{M1}$$

$$(2 + \sqrt{5})^2 = 4 + 4\sqrt{5} + 5 \text{ oe} \quad \text{A1}$$

$$12 + 4\sqrt{5} \text{ and valid conclusion} \quad \text{A1ft}$$

conclude 'yes' or 'no' if (a)(ii) is incorrect

[6]

10.

$\frac{1}{2} \times \frac{4}{3} \times \pi \times 6^3$ or 144π	M1	oe eg [452, 452.45]
$\frac{2}{5} \times \text{their } 144\pi = \frac{1}{3} \times \pi \times x^2 \times 12$ or $57.6\pi = 4\pi x^2$	M1	oe eg [180.8, 181] = [12.5, 12.6] x^2 Must equate two volumes in terms of π
$3 \times \frac{2}{5} \times \text{their } 144\pi \div 12\pi$ or 14.4	M1dep	oe eg their [180.8, 181] \div their [12.5, 12.6] dep on 2nd M1 Correct working to isolate x^2
[3.79, 3.8]	A1	