



GCE AS MARKING SCHEME

SUMMER 2024

**AS
MATHEMATICS
UNIT 1 PURE MATHEMATICS A
2300U10-1**

About this marking scheme

The purpose of this marking scheme is to provide teachers, learners, and other interested parties, with an understanding of the assessment criteria used to assess this specific assessment.

This marking scheme reflects the criteria by which this assessment was marked in a live series and was finalised following detailed discussion at an examiners' conference. A team of qualified examiners were trained specifically in the application of this marking scheme. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners. It may not be possible, or appropriate, to capture every variation that a candidate may present in their responses within this marking scheme. However, during the training conference, examiners were guided in using their professional judgement to credit alternative valid responses as instructed by the document, and through reviewing exemplar responses.

Without the benefit of participation in the examiners' conference, teachers, learners and other users, may have different views on certain matters of detail or interpretation. Therefore, it is strongly recommended that this marking scheme is used alongside other guidance, such as published exemplar materials or Guidance for Teaching. This marking scheme is final and will not be changed, unless in the event that a clear error is identified, as it reflects the criteria used to assess candidate responses during the live series.

WJEC GCE AS MATHEMATICS
UNIT 1 PURE MATHEMATICS A
SUMMER 2024 MARK SCHEME

Q Solution**Mark Notes**

1	$y = 12x^{\frac{1}{2}} - 27x^{-1} + 4$	B1	index form, si
	$\frac{dy}{dx} = 12 \times \frac{1}{2} \times x^{-\frac{1}{2}} - 27 \times (-1)x^{-2}$	B1	correct 1 st term, ft fractional index.
		B1	correct 2nd term, ft -ve index.
	$\frac{dy}{dx} = 6x^{-\frac{1}{2}} + 27x^{-2}$		
	When $x = 9$, $\frac{dy}{dx} = 2 - \left(-\frac{1}{3}\right) = \frac{7}{3}$	B1	cao, accept decimal answers correctly derived from $\frac{7}{3}$, isw

Q	Solution	Mark Notes
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2 $2\sin 2\theta = 1$

$$\sin 2\theta = \frac{1}{2}$$

$$2\theta = 30^\circ, 150^\circ$$

B1 either angle, si

$$\theta = 15^\circ,$$

B1

$$\theta = 75^\circ$$

B1

Notes:

Ignore answers not in the range $0^\circ < \theta < 180^\circ$.

For an incorrect 3rd answer, -1 mark from the last 2 marks.

For an incorrect 4th answer, -1 mark from the last 2 marks.

Q Solution**Mark Notes**

3 $\int (5x^{\frac{1}{4}} + 3x^{-2} - 2) dx$

$$= \frac{5}{5/4} \times x^{\frac{5}{4}} + \frac{3x^{-1}}{-1} - 2x + C$$

B1 $\frac{5}{5/4} \times x^{\frac{5}{4}}$, oe, isw

B1 $+ \frac{3}{-1} x^{-1}$, oe, isw

B1 $-2x$, isw

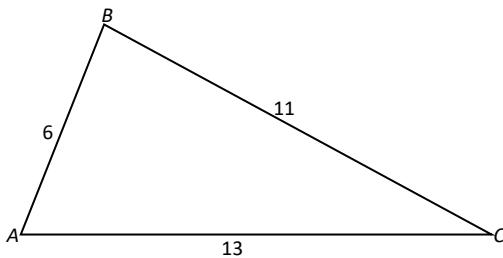
-1 no C

$$= 4x^{\frac{5}{4}} - 3x^{-1} - 2x + C$$

Q	Solution	Mark Notes
4	n	$n^2 - 2$
	1	-1
	2	2
	3	7
	4	14
	5	23
6	34	M1 evaluating $n^2 - 2$ (for 1,...,6) at least twice
		A1 at least 4 values correct.
		Implied by correct conclusion.
$n^2 - 2$ is not divisible by 3 for $1 \leq n \leq 6$		A1 all values correct, and conclusion.

Q Solution**Mark Notes**

5



Cosine rule attempted

M1 allow one error

Must have 2 and cos

$$11^2 = 6^2 + 13^2 - 2 \times 6 \times 13 \cos \alpha$$

$$13^2 = 6^2 + 11^2 - 2 \times 6 \times 11 \cos \beta$$

$$6^2 = 13^2 + 11^2 - 2 \times 13 \times 11 \cos \gamma \quad \text{A1} \quad \text{any one}$$

$$\cos \alpha = \frac{7}{13}; \cos \beta = -\frac{1}{11}, \cos \gamma = \frac{127}{143}, \quad \text{si}$$

$$(\alpha = 57.421^\circ, \beta = 95.216^\circ, \gamma = 27.363^\circ)$$

$$\text{Area} = \frac{1}{2} \times 6 \times 13 \sin \left(\cos^{-1} \left(\frac{7}{13} \right) \right)$$

$$\text{Area} = \frac{1}{2} \times 6 \times 11 \sin \left(\cos^{-1} \left(-\frac{1}{11} \right) \right)$$

$$\text{Area} = \frac{1}{2} \times 11 \times 13 \sin \left(\cos^{-1} \left(\frac{127}{143} \right) \right) \quad \text{M1} \quad \text{any one, FT their angle}$$

$$\text{Area} = 32.86\ldots (\text{cm}^2)$$

A1 Accept 32.7 to 33.0, cao

Q Solution**Mark Notes**

6(a) $7x^{\frac{3}{4}} = \sqrt{147}$

B1 collect x term, $x^{\frac{3}{4}}$.

$$7x^{\frac{3}{4}} = 7\sqrt{3}$$

$$x^{\frac{3}{4}} = 3^{\frac{1}{2}}$$

B1 collect constant term, $3^{\frac{1}{2}}$.

$$x = \left(3^{\frac{1}{2}}\right)^{\frac{4}{3}} \quad \text{or} \quad x^3 = 9$$

B1 si by correct answer

$$x = 3^{\frac{2}{3}}$$

B1 cao, oe $\sqrt[3]{3^2} = \sqrt[3]{9}$

OR

$$7x^{\frac{5}{4}} = \sqrt{147}x^{\frac{1}{2}}$$

$$49x^{\frac{5}{2}} = 147x$$

$$49x^{\frac{3}{2}} = 147$$

(B1) collect x term, $x^{\frac{3}{2}}$.

$$x^{\frac{3}{2}} = 3$$

(B1) collect constant term, 3.

$$x = 3^{\frac{2}{3}}$$

(B1)(B1)

Note

Sight of 2.08... without working 0 marks

Sight of 2.08... from correct working B1 B1 B1 B0

Q Solution**Mark Notes**

$$\begin{aligned}
 6(b) \quad & \frac{(8x - 18)}{(2\sqrt{x} - 3)} = \frac{(8x - 18)(2\sqrt{x} + 3)}{(2\sqrt{x} - 3)(2\sqrt{x} + 3)} & \text{M1} \\
 & = \frac{(8x - 18)(2\sqrt{x} + 3)}{(4x - 9)} & \text{A1} \quad \text{correct denominator simplified} \\
 & = \frac{2(4x - 9)(2\sqrt{x} + 3)}{(4x - 9)} \\
 & = 2(2\sqrt{x} + 3) & \text{A1} \quad \text{convincing}
 \end{aligned}$$

OR

$$\begin{aligned}
 & \frac{(8x - 18)}{(2\sqrt{x} - 3)} = \frac{2(4x - 9)}{(2\sqrt{x} - 3)} & (\text{B1}) \\
 & = \frac{2(2\sqrt{x} + 3)(2\sqrt{x} - 3)}{(2\sqrt{x} - 3)} & (\text{M1}) \\
 & = 2(2\sqrt{x} + 3) & (\text{A1}) \quad \text{convincing}
 \end{aligned}$$

Q Solution**Mark Notes**

7(a) Gradient $L_1 = \frac{4 - 0}{1 - (-3)} (= 1)$ B1 si

Correct method for finding equation of line M1

Equation of L_1 is $y - 0 = 1(x - (-3))$ A1 $y - 4 = 1(x - 1)$ isw

$y = x + 3$

7(b)(i) $x + 3 = 3x - 3$ M1 FT part (a) for M1 A1 A1

$x = 3$ A1

$y = 6$ A1

7(b)(ii) At D , $y = 0$, $0 = 3x - 3$

$x = 1$

D is the point $(1, 0)$ B1 allow verification

7(c) area of $ACD = \frac{1}{2} \times 4 \times 6$ M1 oe, FT their coord of C

$= 12$ A1 cao

Q	Solution	Mark Notes
7(d)	$\text{angle } ACD = \tan^{-1}(6/6) - \tan^{-1}(2/6)$ $= 45^\circ - 18.4349^\circ$ $= 26.57^\circ$	M1 oe, FT their coord of C
		A1 cao Accept 26.6°
OR	$\text{angle } ACD = \tan^{-1}(3) - \tan^{-1}(1)$ $= 71.5651^\circ - 45^\circ$ $= 26.57^\circ$	(M1) oe, FT their coord of C
		(A1) cao Accept 26.6°

OR

$$AC = \sqrt{(6-0)^2 + (3-(-3))^2} = \sqrt{72} = 6\sqrt{2}$$

$$CD = \sqrt{(6-0)^2 + (3-1)^2} = \sqrt{40} = 2\sqrt{10}$$

$$\text{Area} = \frac{1}{2} \times \sqrt{72} \times \sqrt{40} \sin ACD = 12 \quad (\text{M1}) \quad \text{FT their coord of C}$$

$$\sin ACD = \frac{1}{\sqrt{5}}$$

$$\text{angle } ACD = 26.57^\circ \quad (\text{A1}) \quad \text{cao Accept } 26.6^\circ$$

Q	Solution	Mark Notes
8	$x - 10 < x^2 - 5x$	
	$x^2 - 6x + 10 > 0$	M1 For collecting terms on to one side
	$(x - 3)^2 + 1 > 0$	M1 oe
		or Showing minimum > 0
		or Discriminant < 0 (and a point > 0)
		or Discriminant < 0 (and +ve quadratic)
		or correct sketch
		A1 all correct
	Valid explanation, e.g. minimum ≥ 1	A1 Convincing
	This is true for all real values of x .	

Q	Solution	Mark Notes
9(a)	$(2-x)^6$	
	$= 2^6 + 6 \times 2^5 \times (-x) + \frac{6 \times 5}{2 \times 1} \times 2^4 \times (-x)^2 + \dots$ B3 $= 64 - 192x + 240x^2 - \dots$	B1 for each term, isw
9(b)	$(1+ax)(2-x)^6$ $= (1+ax)(64 - 192x + 240x^2 - \dots)$ $= 64 + 64ax - 192x + 240x^2 - 192ax^2 + \dots$ A1	M1 replace $(2-x)^6$ by answer in (a) provided 3 terms.
		allow one slip, ignore extra terms FT (a)
Therefore	$64 + (64a - 192)x + (240 - 192a)x^2$ $\equiv 64 + bx + 336x^2 + \dots$	
$64a - 192 = b$ $240 - 192a = 336$ $a = -\frac{1}{2}$ $b = -224$	FT (a) m1 equating coefficients A1 both equations correct A1 cao A1 cao	
OR	$(1+ax)(2-x)^6$ $= (1+ax)(64 - 192x + 240x^2 - \dots)$ $(1+ax)(64 - 192x + 240x^2 - \dots) \equiv$ $64 + bx + 336x^2 + \dots$	M1 FT their (a), implied by next line A1 si
$64a - 192 = b$ $240 - 192a = 336$ $a = -\frac{1}{2}$ $b = -224$	FT (a) m1 equating coefficients A1 both equations correct A1 cao A1 cao	

Q Solution**Mark Notes**

10(a) $t^2 - 14t + 49 = 25$

M1

$t^2 - 14t + 24 = 0$

$(t - 2)(t - 12) = 0$

A1 method to solve must be seen

$t = 2, 12$

Required value is $t = 2$, (since $t \leq 7$).A1 $t = 12$ rejected

10(b) $\frac{dy}{dt} = 2t - 14$

M1 at least 1 correct term.

$t = 3, \frac{dy}{dt} = 2 \times 3 - 14$

A1 substitute $t = 3$, si

$\frac{dy}{dt} = -8$

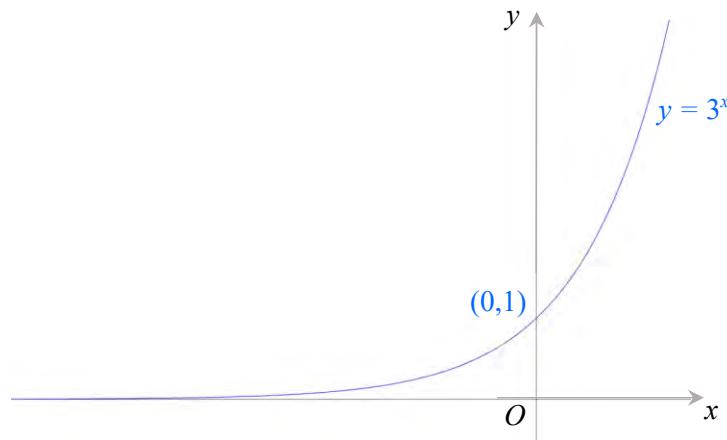
A1 cao

Rate of decrease is 8 (cms⁻¹)

Q Solution

Mark Notes

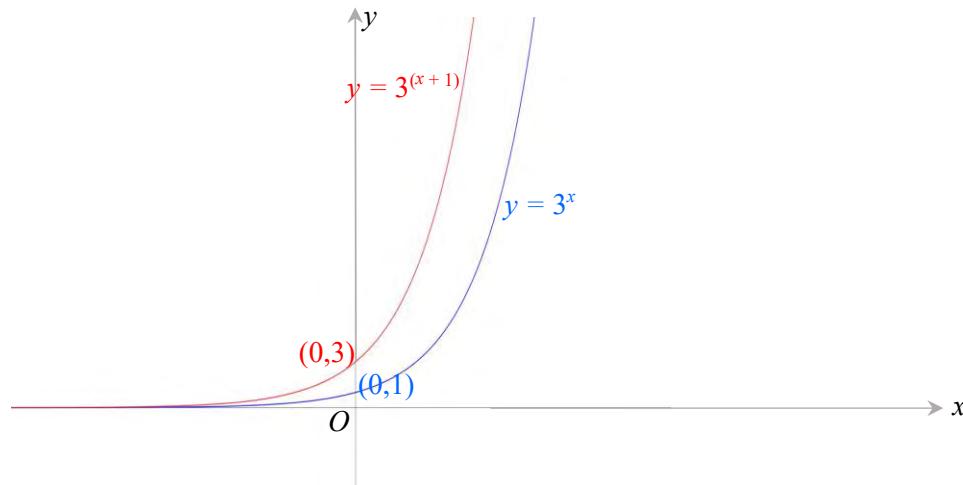
11(a)



G1 graph of $y = 3^x$, -ve domain required. x -axis not crossed.

B1 $(0,1)$ accept all correct methods.

11(b)



B1 graph of $y = 3^{x+1}$, same shape as (a), graphs do not intersect, ft (a) provided G1 awarded.

B1 $(0,3)$ accept all correct methods.

Q	Solution	Mark Notes
12(a)	$\frac{dy}{dx} = -3x^2 + 12$	B1
	$\frac{dy}{dx} = -3x^2 + 12 = 0$	M1 si
	$x = 2, x = -2$	A1 cao any pair of correct values
	$y = -4, y = -36$	A1 cao all 4 values correct, no extra.
	$\frac{d^2y}{dx^2} = -6x$	M1 oe, ft quadratic $\frac{dy}{dx}$, si
		Eg -ve cubic has min before max. Correct sketch of negative cubic.
	FT only if x -coordinate of min $<$ x -coordinate of max.	
	$(x = 2, \frac{d^2y}{dx^2} = -12 < 0.)$	
	$(2, -4)$ is a maximum point	A1 ft their x value except $x = 0$.
	$(x = -2, \frac{d^2y}{dx^2} = 12 > 0.)$	
	$(-2, -36)$ is a minimum point	A1 ft their x value provided different conclusion except $x = 0$.

Q	Solution	Mark Notes
12(b)	Curve is decreasing when	
	$\frac{dy}{dx} < 0$	FT their $\frac{dy}{dx}$
	$-3x^2 + 12 < 0$	M1 allow \geq or \leq throughout, oe
	$x^2 > 4$	
	$x < -2$ or $x > 2$	A1 A0 if 'and' instead of 'or'
	$(x \in) (-\infty, -2) \cup (2, \infty)$	B1 cao Allow $-2] \cup [2$
	OR	
	$\{x : x < -2\} \cup \{x : x > 2\}$	(B1) cao

Alternative Solution

$x < -2$	B1 ft their -2, if used.
or $x > 2$	B1 ft their 2, if used.
$(x \in) (-\infty, -2) \cup (2, \infty)$	B1 cao Allow $-2] \cup [2$
OR	
$\{x : x < -2\} \cup \{x : x > 2\}$	(B1) cao

Q Solution

Mark Notes

13(a) $\mathbf{AB} = (\mathbf{i} + 3\mathbf{j}) - (4\mathbf{i} + 7\mathbf{j})$

M1 allow $(4\mathbf{i} + 7\mathbf{j}) - (\mathbf{i} + 3\mathbf{j})$

$$\mathbf{AB} = -3\mathbf{i} - 4\mathbf{j}$$

A1 cao

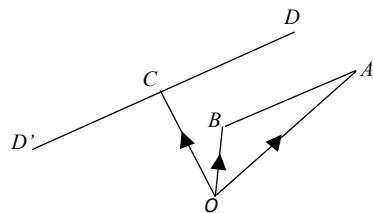
13(b) Distance = $\sqrt{(-3)^2 + (-4)^2}$

M1 correct method for $|a\mathbf{i} + b\mathbf{j}|$,
 $a, b \neq 0$, si

Distance = 5

A1 ft (a)

13(c)



$$\mathbf{d} = \mathbf{c} - \mathbf{BA} = \mathbf{c} + \mathbf{AB}$$

M1 si

$$\mathbf{d} = (-2\mathbf{i} + 5\mathbf{j}) + (-3\mathbf{i} - 4\mathbf{j})$$

$$\mathbf{d} = -5\mathbf{i} + \mathbf{j}$$

A1 ft \mathbf{AB}

or

$$\mathbf{d} = \mathbf{c} + \mathbf{BA} = \mathbf{c} - \mathbf{AB}$$

M1 si $\mathbf{a} + \mathbf{BC}$, $\mathbf{BC} = -3\mathbf{i} + 2\mathbf{j}$

$$\mathbf{d} = (-2\mathbf{i} + 5\mathbf{j}) - (-3\mathbf{i} - 4\mathbf{j})$$

$$4\mathbf{i} + 7\mathbf{j} - 3\mathbf{i} + 2\mathbf{j}$$

$$\mathbf{d} = \mathbf{i} + 9\mathbf{j}$$

A1 ft \mathbf{AB}

Q	Solution	Mark Notes
14(a)	A is the point $(-2, 0)$	B1
	B is the point $(0, 2)$	B1
14(b)	$I = \int_{-2}^0 (2 - 3x - 2x^2) dx$ $= \left[2x - \frac{3}{2}x^2 - \frac{2}{3}x^3 \right]_{-2}^0$ $= \left[0 - \left(-4 - 6 + \frac{16}{3} \right) \right]$ $= \frac{14}{3}$	M1 attempt to integrate y wrt x Limits not required. At least one power of x increased
		A1 correct integration
		m1 correct use of candidate's limits,
		A1 cao, allow one decimal place correctly derived from $\frac{14}{3}$.
	Area of triangle $\left(= \frac{1}{2} \times 2 \times 2 \right) = 2$	B1 oe, ft (a)
	Required area $\left(= \frac{14}{3} - 2 \right) = \frac{8}{3}$	A1 cao, allow one decimal place correctly derived from $\frac{8}{3}$.

Note:

Must be supported by workings.

If M0, award SC1 for sight of $\frac{14}{3}$, OR SC2 for $\frac{8}{3}$

Q Solution**Mark Notes**Alternative solution

$$14(b) \quad I = \int_{-2}^0 (2 - 3x - 2x^2 - x - 2) \, dx$$

(M1) attempt to integrate y wrt x
 Limits not required.
 At least one power of x increased

(A1) attempt to subtract integrand

$$= \int_{-2}^0 (-4x - 2x^2) \, dx$$

$$= \left[-2x^2 - \frac{2x^3}{3} \right]_{-2}^0$$

(A1) correct integration

$$= \left[0 - \left(-8 + \frac{16}{3} \right) \right]$$

(m1) correct use of candidate's limits,

$$= \frac{8}{3}$$

(A2) cao

Note:

Must be supported by workings.

If M0, SC2 for $\frac{8}{3}$

Q	Solution	Mark Notes
15	$2\sin x + 3\cos^2 x - 3 = 0$	M1
	$2\sin x + 3(1 - \sin^2 x) - 3 = 0$	M1 $\sin^2 x + \cos^2 x = 1$
	$3\sin^2 x - 2\sin x = 0$	A1 si by $\sin x = 0$ AND $\sin x = \frac{2}{3}$
	$\sin x(3\sin x - 2) = 0$	
	$\sin x = \frac{2}{3}$ or $\sin x = 0$	A1 cao both roots (no extra roots)
		FT their $\sin x = k$ for $0 < k \leq 1$.
	(At A,) $x = 41.81^\circ$	B1
	(At B,) $x = 138.19^\circ$	B1
	(At C,) $x = 180^\circ$	B1

Note:

Do not follow through for trig functions other than sine.

Ignore angles greater than 180°

Q Solution

16(a) Discriminant $= (-k)^2 - 4 \times 1 \times 4$
 $= k^2 - 16$

If no real roots, discriminant < 0

$$k^2 - 16 < 0$$

Critical values $-4, 4$

$$-4 < k < 4$$

Mark Notes

B1 si

M1 condone \leq , si by correct answer.

16(b) $x^2 - 3x + 4 = x + 16$

M1

$$x^2 - 4x - 12 = 0$$

m1 write as quadratic equation

$$(x + 2)(x - 6) = 0$$

$$x = -2, x = 6$$

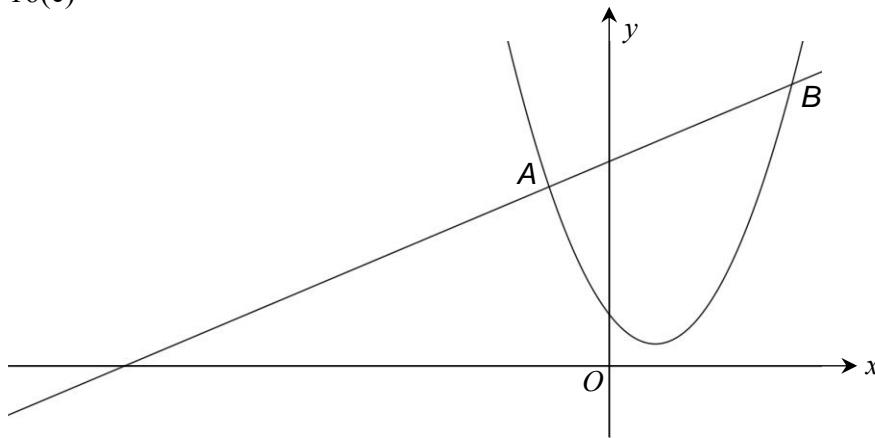
A1 cao one correct pair

$$y = 14, y = 22$$

A1 cao all correct

Points of intersection are $(-2, 14)$ and $(6, 22)$.

16(c)



G1 +ve quadratic, above x -axis

G1 straight line, +ve gradient
 1 point of intersection in 1st quadrant, 1 point of intersection in 2nd quadrant

Q Solution**Mark Notes**

17(a) $1 = \log_{10}(2 - c)$

M1 si

$2 - c = 10$

$c = -8$

A1

17(b) $\log_{10}(5 - \alpha) - \log_{10}(2 - \alpha) = 1.2$

M1 Condone

$\log_{10}(2 - \alpha) - \log_{10}(5 - \alpha) = 1.2$

$\log_{10}\left(\frac{5 - \alpha}{2 - \alpha}\right) = 1.2$

B1 subtraction law

$\frac{5 - \alpha}{2 - \alpha} = 10^{1.2} (= 15.8489\dots)$

m1 logs removed correctly

$5 - \alpha = 10^{1.2}(2 - \alpha)$

A1 removal of denominator

$5 - \alpha = 2 \times 10^{1.2} - 10^{1.2} \times \alpha$

$\alpha(10^{1.2} - 1) = 2 \times 10^{1.2} - 5$

$\alpha = 1.798$

A1 cao

Q Solution**Mark Notes**

18(a) $(x - -3)^2 + (y - -1)^2 = (\sqrt{5})^2$

M1 condone $\sqrt{5}$ on RHS

$$(x + 3)^2 + (y + 1)^2 = 5$$

$$x^2 + 6x + 9 + y^2 + 2y + 1 = 5$$

$$x^2 + y^2 + 6x + 2y + 5 = 0$$

A1 convincing

OR

Equation of circle radius r is

$$x^2 + y^2 + 2fx + 2gy + c = 0$$

Centre $(-f, -g)$, $c = f^2 + g^2 - r^2$ (M1) used

$$f = 3, g = 1, c = 3^2 + 1^2 - \sqrt{5}^2 = 5$$
 (A1)

OR

$$x^2 + y^2 + 6x + 2y + 5 = 0$$

$$(x + 3)^2 + (y + 1)^2 - 9 - 1 + 5 = 0$$
 (M1) M0 if no working shown.

$$(x + 3)^2 + (y + 1)^2 = 5$$

Hence centre $= (-3, -1)$, radius $= \sqrt{5}$ (A1)

Q	Solution	Mark Notes
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18(b)(i) Tangents have equations $y = mx$ B1

Touches circle when

$$x^2 + (mx)^2 + 6x + 2mx + 5 = 0 \quad \text{M1}$$

$$(1 + m^2)x^2 + 2(3 + m)x + 5 = 0 \quad \text{A1} \quad \text{si}$$

$$\text{Discriminant} = 4(3 + m)^2 - 4(1 + m^2) \times 5 \quad \text{B1} \quad \text{ft 1 slip in quadratic}$$

$$\text{If tangent, discriminant} = 0 \quad \text{M1} \quad \text{used}$$

$$9 + 6m + m^2 - 5 - 5m^2 = 0$$

$$2m^2 - 3m - 2 = 0$$

$$(2m + 1)(m - 2) = 0$$

$$m = -\frac{1}{2} \quad m = 2 \quad \text{A1} \quad \text{cao, both values}$$

$$y = -\frac{1}{2}x \quad y = 2x$$

Special case 1

Candidates who substitute $y = mx + c$ can only earn method marks, B0 M1 A0 B0 M1 A0

Special case 2

Candidates who obtain the correct answer using any method, award as follows:

$$y = -\frac{1}{2}x \quad y = 2x \quad \text{SC1}$$

Q Solution**Mark Notes**

$$18(b)(ii) m = -\frac{1}{2}, \quad \frac{5}{4}x^2 + 5x + 5 = 0$$

M1 FT their derived m provided $y = mx$

$$x^2 + 4x + 4 = 0$$

$$(x + 2)^2 = 0$$

m1 must be a perfect square, si

$$x = -2, y = 1 \quad (-2, 1)$$

A1 cao

$$m = 2, \quad 5x^2 + 10x + 5 = 0$$

(M1) award if previous M1 not awarded

$$x^2 + 2x + 1 = 0$$

$$(x + 1)^2 = 0$$

(m1) must be a perfect square, si

$$x = -1, y = -2 \quad (-1, -2)$$

A1 cao

OR

$$x = \frac{-b}{2a} = \frac{-2(3+m)}{2(1+m^2)} = \frac{-(3+m)}{(1+m^2)} \quad (\text{M1})$$

$$\text{At } m = -\frac{1}{2}, x = \frac{-(3-\frac{1}{2})}{(1+\frac{1}{4})} = -2 \quad (\text{m1})$$

$$y = -\frac{1}{2} \times (-2) = 1 \quad (-2, 1) \quad (\text{A1})$$

$$\text{At } m = 2, x = \frac{-(3+2)}{(1+4)} = -1$$

$$y = 2 \times (-1) = -2 \quad (-1, -2) \quad (\text{A1})$$

Special case

Candidates who obtained the correct answer using any method, award as follows:

$$(-2, 1) \quad (-1, -2)$$

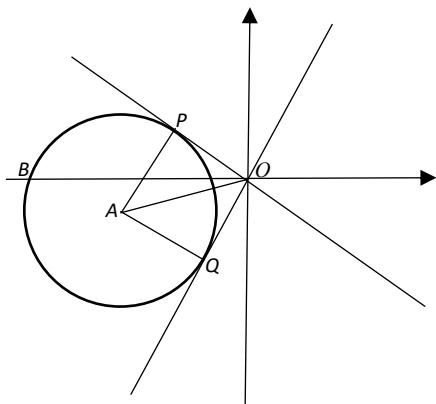
SC1

Q Solution

Mark Notes

Alternative solution

18(b)(i)



$$\tan(BOA) = \frac{1}{3}$$

$$BOA = 18.43494882^\circ$$

B1 $BOP = 26.56505118^\circ$

$$OA = \sqrt{(3)^2 + (1)^2} = \sqrt{10}$$

B1

$$OP = OQ = \sqrt{(\sqrt{10})^2 - (\sqrt{5})^2} = \sqrt{5} \quad \text{B1}$$

Triangle POA and QOA are isosceles right angled

Angles $POA = 45^\circ$ and $QOA = 45^\circ$ B1

$$\text{Gradient } OQ = \tan(45 + 18.43494882) = 2 \quad \text{B1} \quad \tan(243.43494882) = 2$$

$$y = 2x$$

$$\text{Gradient } OP = -\frac{1}{2} \quad \text{B1} \quad \tan(26.56505118) = \frac{1}{2}$$

$$\tan(116.56505118) = -\frac{1}{2}$$

$$y = -\frac{1}{2}x$$