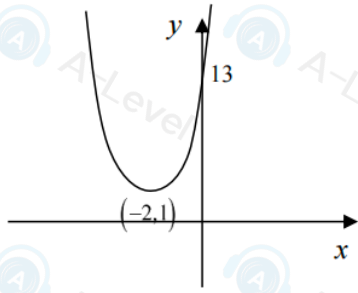


Question Number	Scheme	Marks
2.(a)	$\frac{1}{4-2\sqrt{2}} = \frac{1}{4-2\sqrt{2}} \times \frac{4+2\sqrt{2}}{4+2\sqrt{2}}$	M1
	$= \frac{4+2\sqrt{2}}{16-8} = \frac{1}{2} + \frac{1}{4}\sqrt{2}$ oe	A1
		(2)
	(b) $4x = 2\sqrt{2}x + 20\sqrt{2} \Rightarrow (4-2\sqrt{2})x = 20\sqrt{2}$	M1
	$\Rightarrow x = \frac{20\sqrt{2}}{(4-2\sqrt{2})} = 20\sqrt{2} \times (a)$	dM1
	$\Rightarrow x = 20\sqrt{2} \times \left(\frac{1}{2} + \frac{1}{4}\sqrt{2}\right) = 10 + 10\sqrt{2}$	A1
		(3)
		(5 marks)

Question	Scheme		Marks
3(a)	$a = 3$		B1
	$b = \pm 2$		M1
	$3x^2 + 12x + 13 = 3(x + 2)^2 + 1$ or $a = 3, b = 2, c = 1$		A1
			(3)
(b)		Correct U shape with minimum in second quadrant	B1
		Intercept 13 on y-axis.	B1
		Vertex at $(-2, 1)$	B1ft
			(3)
			(6 marks)

Question Number	Scheme	Marks
6 (a)	$\frac{\sin CAO}{17} = \frac{\sin 0.6}{15} \Rightarrow CAO = 0.6944...$ Angle $COA = \pi - 0.6 - "0.6944" = 1.847$ *	M1 dM1, A1* (3)
(b)	Attempts $\frac{1}{2}r^2\theta = \frac{1}{2} \times 15^2 \times \theta$ where $\theta = (2\pi - 1.847)$ or just 1.847 OR attempts $\frac{1}{2}ab \sin C = \frac{1}{2} \times 15 \times 17 \sin(1.847)$ Attempts $\frac{1}{2}r^2\theta = \frac{1}{2} \times 15^2 \times (2\pi - 1.847) (\approx 499)$ AND $\frac{1}{2}ab \sin C = \frac{1}{2} \times 15 \times 17 \sin(1.847) (\approx 122.7)$ AND adds (awrt) 622 m²	M1 dM1 A1 (3)
(c)	$r\theta = 15 \times \theta$ where $\theta = (2\pi - 1.847)$ or just 1.847 OR $(AC^2 =) 15^2 + 17^2 - 2 \times 15 \times 17 \cos(1.847) (\approx 653)$ Attempts $r\theta = 15 \times (2\pi - 1.847) (\approx 66.54)$ AND $\{AC = \} \sqrt{15^2 + 17^2 - 2 \times 15 \times 17 \cos(1.847)}$ 92.1 + 2 = (awrt) 94.1 m	M1 dM1 A1 (3) (9 marks)

Question Number	Scheme	Marks
3.(a)	$y = \frac{5x^3 - 8}{2x^2} = \frac{5}{2}x - 4x^{-2}$ $\frac{dy}{dx} = \frac{5}{2} + 8x^{-3}$	M1 dM1 A1 A1 (4)
(b)	Substitutes $x=2$ into their $\frac{dy}{dx} = \frac{5}{2} + \frac{8}{x^3} \Rightarrow \frac{dy}{dx} = \frac{7}{2}$ Uses their $\frac{7}{2}$ and (2, 4) $\Rightarrow y - 4 = \frac{7}{2}(x - 2)$ $\Rightarrow 7x - 2y - 6 = 0$	M1 M1 A1 (3) (7 marks)