



UNIVERSITI TEKNOLOGI MARA
MARKING SCHEME

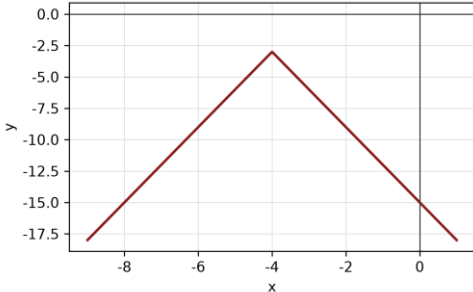
COURSE	PRE CALCULUS
COURSE CODE	MAT133
EXAMINATION	OCTOBER 2026
TIME	2 HOURS

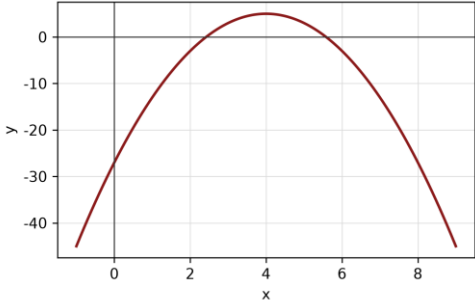
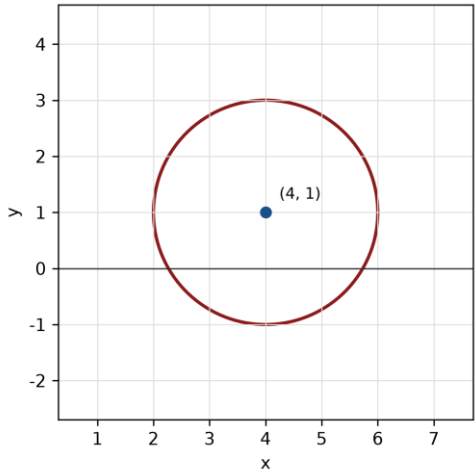
INSTRUCTIONS TO MARKERS

1. This marking scheme accompanies the MAT133 mock paper (October 2026).
2. Answers and marking points are for local study use only.

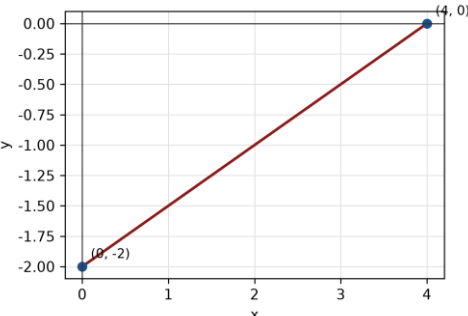
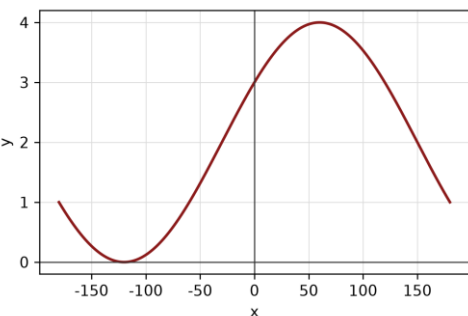
FOR MARKERS' USE ONLY

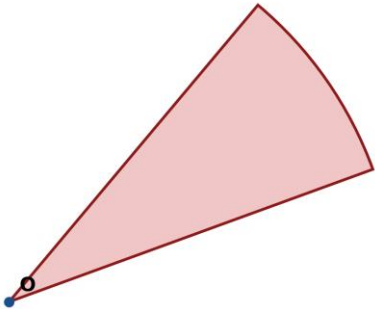
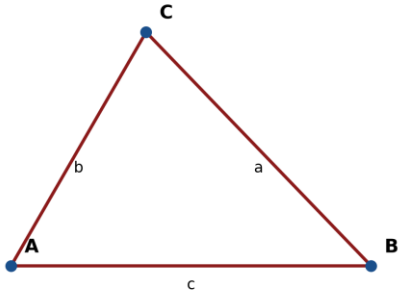
This marking scheme consists of 6 printed pages

NO	SOLUTION	MARK
1 a)	$-3 < 3x - 1 < 2$ $-2 < 3x < 3$ $-\frac{2}{3} < x < 1$ 	4 m
1 b)	$ 5x - 2 - 7 > 0$ $2 - 5x > 7 \text{ or } 2 - 5x \leq -7$ $(-\infty, -1) \cup (\frac{9}{5}, \infty)$ 	5 m
1 c)	$y = -3 x + 4 - 3$ vertex $(-4, -3)$ no real intercepts 	5 m
2 a)	$-1x + 4 \neq 0$ $x \neq 4$ $3x + -5 \geq 0$ $x \geq \frac{5}{3}$	4 m

NO	SOLUTION	MARK
2 b)	$y = 5 - 2(x - 4)^2$ vertex (4, 5) $y(0) = -27$ 	5 m
2 c)	$(x - 4)^2 + (y - 1)^2 = 4$ $x^2 - 8x + y^2 - 2y + 17 = 4$ $x^2 - 8x + y^2 - 2y + 13 = 0$ 	5 m
3 a)	$\frac{2 + 4i}{3 + 2i}$ $= \frac{(2 + 4i)(3 - 2i)}{(3 + 2i)(3 - 2i)}$ $= \frac{14 + 8i}{13}$ $\frac{14}{13} + \frac{8i}{13}$	5 m

NO	SOLUTION	MARK
3 b)	$ z = \sqrt{-5^2 + 12^2} = 13$ $\tan \theta = \frac{12}{-5}, \quad \theta = 112.6^\circ$	5 m
3 c)	$x^3 - 2x^2 - 9x + 18$ $f(3) = 0, \quad f(-3) = 0, \quad f(2) = 0$ $(x - 3)(x - 2)(x + 3)$	5 m
4 a)	$-3x + 3y + z = -14$ $2x + 2y - 3z = 2$ $2x + 3y + 3z = -13$ $x = 1, \quad y = -3, \quad z = -2$	5 m
4 b)	$x = 0, \quad y = 0, \quad 1x + 3y = 6$ $x \geq 0, \quad y \geq 0, \quad 1x + 3y \leq 6$ 	5 m

NO	SOLUTION	MARK
4 c)	$\frac{x}{4} - \frac{y}{2} = 1$ $-2x + 4y = -8$ $y = \frac{x}{2} - 2$ 	4 m
5 a)	amplitude = 2 period = $\frac{360^\circ}{1} = 360^\circ$ phase shift = $-\frac{30}{1} = -30^\circ$ 	5 m

NO	SOLUTION	MARK
5 b)	$\theta = 30^\circ \times \frac{\pi}{180} = \frac{\pi}{6}$ $s = r\theta = 6\left(\frac{\pi}{6}\right) = \pi$ 	4 m
5 c)	$a^2 = b^2 + c^2 - 2bccosA$ $a^2 = 9^2 + 12^2 - 2(9)(12)\cos 120^\circ = 333$ $a = 3\sqrt{37}$ 	4 m