

Answers

1. (a) $2y - 3x - 11 = 0$ (b) $(-1, 4)$
2. $y = 3x^2 - \frac{4}{3}x^3 + \frac{11}{3}$
3. (a) $\overrightarrow{AB} = \begin{pmatrix} 4 \\ 4 \\ -3 \end{pmatrix}$ $\overrightarrow{AC} = \begin{pmatrix} -3 \\ 6 \\ 3 \end{pmatrix}$ (b) 86.3°
4. Proved; $(m + 1)^2 + 28 \geq 0 \forall m$
5. $x = 9$
6. Decreasing point of inflection at $x = 0$, minimum turning point at $x = 3$
7. (a) (i) $11 - 8\cos 2x$ (ii) $22 - 16\cos x$ (b) $x = 41.4^\circ, 75.5^\circ, 284.5^\circ, 318.6^\circ$
8. $\frac{125}{6} \text{ units}^2$
9. proof
10. $r = 4.57 \text{ units}$
11. $a = 4, b = 2$
12. $-31 < k < 5$