

Answers

1. $3x + 4y - 26 = 0$
2. (a) $\sqrt{3}y + x - 2\sqrt{3} = 0$ (b) $A(2\sqrt{3}, 0)$
3. (a) $m = \frac{2}{5}c = 5$ (b) $L = \frac{25}{3}$
4. (a) $k = 3$ (b) 1:2
5. (a) $f^{-1}(x) = \sqrt[3]{x-1}$ (b) $1 \leq x \leq 65$
6. (a) max TP at (0,6); POI at (-3,2) (b) max TP at $x = -2$, root at $x = 1$.
7. $(x+1)(x^2 - x + 3)$
8. 3
9. $\log_a\left(\frac{9}{2}\right)$
10. (a) $2\cos\left(x + \frac{\pi}{6}\right)$ (b) (i) -1 (ii) $\frac{5\pi}{6}$
11. (a) $\overrightarrow{AC} = u - t$ (b) $\overrightarrow{MN} = \frac{3}{4}v - \frac{1}{2}t - \frac{1}{2}u$
12. (a) $x = 1$ (b) $y - 6x + 2 = 0$
13. (a) $\cos 2x = \frac{2}{3}$ (b) $\cos x = \frac{\sqrt{30}}{6}$ or $\cos x = \frac{\sqrt{5}}{\sqrt{6}}$

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. $-31 < k < 5$