

5. Which of the following equations described a circle having center at point (2, -5) and passing through the point (8, 3)?

- a) $x^2 + y^2 - 4x + 10y + 29 = 0$
- b) $x^2 + y^2 - 4x + 10y - 79 = 0$
- c) $x^2 + y^2 - 4x + 10y - 71 = 0$
- d) $x^2 + y^2 - 4x + 10y - 100 = 0$

6. A particle moves in the x-y plane with the following equation path:

$$x = 9\sin t$$

$$y = 2\cos t$$

Solve for the equation of the path of the particle.

- a) $81x^2 + 4y^2 = 324$
- b) $4x^2 + 81y^2 = 324$
- c) $2x^2 + 9y^2 = 18$
- d) $9x^2 + 2y^2 = 18$

7. What is the cross product of these two vectors $\vec{A} = 8i + j - 2k$ and $\vec{B} = 3i - j + 3k$?

- a) $i - 30j - 11k$
- b) $i + 30j - 11k$
- c) $i + 18j + 11k$
- d) $-i - 18j + 11k$

8. Solve for the angle made by these two vectors:

$$\vec{M} = i - j + k$$

$$\vec{N} = -i - j + k$$

- a) 85°
- b) 80°
- c) 75°
- d) 70°

9. Solve for the inflection point of the following polynomial function:

$$f(x) = x^4 - 12x^3 + 30x^2$$

- a) $(-5, 125)$
- b) $(5, -125)$
- c) $(19, 1)$
- d) $(-1, -19)$

10. Which expression below is equivalent to 1?

- a) $2 \sin \theta \cos \theta$
- b) $\sin^2 \theta + \cos^2 \theta$
- c) $\frac{1 - \cos 2\theta}{2}$
- d) $\cos^2 \theta - \sin^2 \theta$