

Solutions

Each answer shows the steps, then the **result**.

2.1

- $x = 3 \cos \frac{\pi}{2} = 0$, $y = 3 \sin \frac{\pi}{2} = 3$: $(0, 3)$

2.2

- $x = 2 \cos \theta \cos \theta = 2 \cos^2 \theta$, $y = 2 \cos \theta \sin \theta$

2.3

- $r = 5$, $\theta = \frac{\pi}{2}$: $(5, \frac{\pi}{2})$

3.1 B

- $x = r \cos \theta$

3.2

(a)

- $x = (1 + \cos \theta) \cos \theta$, $y = (1 + \cos \theta) \sin \theta$

(b)

- at $\theta = 0$: $r = 2$, $x = 2$, $y = 0$: $(2, 0)$

3.3

- $x = 2 \sin \theta \cos \theta = \sin(2\theta)$; $\frac{dx}{d\theta} = 2 \cos(2\theta)$. (Or via product rule on $2 \sin \theta \cos \theta$.)