

Solutions

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

2.1

- $v = \omega r = 8 \times 0.5 = 4 \text{ m s}^{-1}$

2.2

- It is proportional to the distance from the axis (farther is faster)

2.3

- $a = \alpha r = 3 \times 2 = 6 \text{ m s}^{-2}$

2.4

- $\omega = v/r = 6/0.2 = 30 \text{ rad s}^{-1}$

3.1 B

- $v = \omega r$

3.2 B

- the rim (larger r) moves faster

3.3

(a)

- $\omega = v/r = 7/0.35 = 20 \text{ rad s}^{-1}$

(b)

- Zero — the contact point is instantaneously at rest

3.4

(a)

- $a = \alpha r = 20 \times 0.1 = 2 \text{ m s}^{-2}$

(b)

- Less (smaller r)