

Watch. Practice. Understand. | Lesson 172

Pre-Calculus 6.1 Part II Linear, Angular Velocity and Their Relationship

Watch the matching video: <https://www.youtube.com/watch?v=ThOdd7bQCvA>

Practice focus: Arc length, sectors and angular speed

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

01 Find the arc length in a radius-6 circle subtended by angle $2\pi/3$ radians.

02 Find the area of that sector.

03 A wheel turns 30 revolutions per minute. Find angular speed in radians per second.

04 A radius-0.4-m wheel rotates at 5 rad/s. Find its rim's linear speed.

Worked answers | Lesson 172

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01 Find the arc length in a radius-6 circle subtended by angle $2\pi/3$ radians.

$$s = r\theta = 6(2\pi/3) = 4\pi.$$

02 Find the area of that sector.

$$A = r^2\theta/2 = 36(2\pi/3)/2 = 12\pi \text{ square units.}$$

03 A wheel turns 30 revolutions per minute. Find angular speed in radians per second.

$$30(2\pi)/60 = \pi \text{ rad/s.}$$

04 A radius-0.4-m wheel rotates at 5 rad/s. Find its rim's linear speed.

$$v = r\omega = 0.4(5) = 2 \text{ m/s.}$$