Degrees, Radians, Revolutions

UNIT 6 LESSON ____ INVESTIGATION ____ NOTES

Lesson Vocabulary

Degrees, Radians, and Revolutions – Measures the distance an angle traveled in a unit circle.

Revolutions – How many times it traveled around the circle. RPM's in a car is revolution's per minute (how many times your engine is spinning per minute).

Converting Between Degrees to Radians

- Degrees to Radians

$$\text{Radians} = \text{Degrees} \cdot \frac{\pi}{180}$$

- Radians to Degrees

$$\text{Degrees} = \text{Radians} \cdot \frac{180}{\pi}$$

* NO Decimals * * Reduce *

Calculate Revolutions

$$\text{Revolutions} = \frac{\text{Degrees}}{360}$$

Example Problem(s)

ex.) Convert each degree to radians and revolutions.

a) 70°

$70 \cdot \frac{\pi}{180}$

$\frac{70\pi}{180}$

$\frac{7\pi}{18}$

$\frac{70}{360} = \frac{7}{36}$

b) 290°

$290 \cdot \frac{\pi}{180}$

$\frac{290\pi}{180}$

$\frac{29\pi}{18}$

$\frac{290}{360} = \frac{29}{36}$

c) 540°

$540 \cdot \frac{\pi}{180}$

3π

$\frac{540}{360} = \frac{3}{2}$

d) 170°

$170 \cdot \frac{\pi}{180}$

$\frac{170\pi}{180}$

$\frac{17\pi}{18}$

$\frac{170}{360} = \frac{17}{36}$

ex.) Convert each radian to degrees and revolutions.

a) $\frac{5\pi}{2}$

$\frac{5\pi}{2} \cdot \frac{180}{\pi}$

$\frac{900}{2}$

450°

$\frac{450}{360} = \frac{5}{4}$

b) $\frac{5\pi}{36}$

$\frac{5\pi}{36} \cdot \frac{180}{\pi}$

$\frac{900}{36}$

25°

$\frac{25}{360} = \frac{5}{72}$

c) $\frac{19\pi}{18}$

$\frac{19\pi}{18} \cdot \frac{180}{\pi}$

$\frac{3420}{18}$

190°

$\frac{190}{360} = \frac{19}{36}$

d) $\frac{5\pi}{9}$

$\frac{5\pi}{9} \cdot \frac{180}{\pi}$

$\frac{900}{9}$

100°

$\frac{100}{360} = \frac{5}{18}$