

MATH 150 – TOPIC 8

RELATIONSHIP BETWEEN DEGREES AND RADIANS

- I. Angles are measured in either degrees or radians (rad). One complete revolution, which is 360° , equals 2π rad. So $360^\circ = 2\pi$ rad, or $180^\circ = \pi$ rad.

$$\text{This means } 1^\circ = \frac{\pi}{180} \text{ rad and } 1 \text{ rad} = \frac{180^\circ}{\pi}.$$

To change from degrees to radians, multiply by $\frac{\pi}{180}$.

To change from radians to degrees, multiply by $\frac{180}{\pi}$.

In calculus, the trigonometric functions are nearly always expressed in terms of radians. Thus, it is important to think of $\sin \frac{\pi}{6}$, $\sin \frac{\pi}{2}$, etc. instead of $\sin 30^\circ$, $\sin 90^\circ$, etc.

II. PRACTICE PROBLEMS for Topic 8 - Relationship Between Degrees and Radians

8.1. $\frac{\pi}{2}$ radians = _____ $^\circ$

8.2. $\frac{3\pi}{4}$ radians = _____ $^\circ$

8.3. $\frac{7\pi}{6}$ radians = _____ $^\circ$

8.4. $150^\circ =$ _____ rad

8.5. $300^\circ =$ _____ rad

8.6. $30^\circ =$ _____ rad

ANSWERS to PRACTICE PROBLEMS (Topic 8-Relationship Between Degrees and Radians)

8.1 90°

8.2 225°

8.3 210°

8.4 $\frac{5\pi}{6}$ rad

8.5 $\frac{5\pi}{3}$ rad

8.6 $\frac{\pi}{6}$ rad

[Beginning of Topic](#)[Skills Assessment](#)