§4.1: Radian and Degree Measure

"I WILL…

…convert radians to degrees and degrees to radians, rotate angles, establish complementary and supplementary, coterminal angles, DMS to decimal measure"

I. Conversions

A. 180° = _____ Radian

B. 1° = _____ Radian

C. $\frac{180}{\pi}$ = _____ Radian

D. Conversions between Degrees and Radians:

1. Rewrite degrees as radians, multiply ——

2. Rewrite radians as degrees, multiply ——

| | |
|---|---|
| Ex 1: Convert 240° to radian measure | Ex 2: Convert $\frac{9\pi}{2}$ to degree measure |
| Your Turn: Convert –2° to radian measure | Ex 3: Convert 1 radian to degree measure |
| Your Turn: Convert $\frac{1}{4}$ radian to degree measure | |

II. Angle of Rotation

A. Angle of rotation is formed by two rays with a common endpoint (called the _____).

B. One ray is called the _____ side.

C. The other ray is called the _____ side.

D. The measure of the angle is determined by the amount and direction of rotation from the initial side to the terminal side.

| Ex 4: Draw 210° with the given measure in standard position. Then determine in which quadrant the terminal side lies. | Ex 5: Draw $\frac{9\pi}{5}$ with the given measure in standard position. Then determine in which quadrant the terminal side lies. |
|---|---|
| Your Turn: Draw $-\frac{\pi}{4}$ with the given measure in standard position. Then determine in which quadrant the terminal side lies. | |

III. Complementary and Supplementary

A. Complementary angles are two angles that add up to _____°
B. Supplementary angles are two angles that add up to _____°

| Ex 6: Complementary & supplementary angles for $\frac{\pi}{12}$ | Ex 7: Complementary and supplementary angles for 3 Radians |
|---|---|
| Your Turn: Complementary & supplementary angles for $\frac{\pi}{5}$ | |

IV. Coterminal Angles

A. Coterminal angles are angles in standard position with the same terminal side
B. To determine the coterminal angles, add or subtract _____° by rotating counter clockwise for a positive rotation

| Ex 8: Find two coterminal rays (1 positive and 1 negative) of 40° | Ex 9: Find one positive and one negative coterminal angle of $\frac{7\pi}{3}$. |
|---|---|
| Your Turn: Find one positive and one negative coterminal angle of $-\frac{7\pi}{9}$ | |

Assignment: Page 269: 11-45 odd (omit 21, 23)