

# Happy National Unplugging Day!

- Park your phones
- Grab your laptops
- quiz in 2 minutes :)

Radians and Degrees Conversions Notes

**All Unit Circle values we will memorize:**

For all others... easy conversion formulas

→ 30's, 45's,  
60's,  
quadrants

$$\frac{\pi}{180} = 1$$

**Degrees to Radians:** multiply by  $\frac{\pi}{180}$

**Convert the following from degrees to radians.**

$$1. 40^\circ \cdot \frac{\pi}{180} = \frac{40\pi}{180} = \frac{2\pi}{9}$$

$$2. 75^\circ \cdot \frac{\pi}{180} = \frac{75\pi}{180} = \frac{5\pi}{12}$$

$$3. -100^\circ \cdot \frac{\pi}{180} = \frac{-100\pi}{180} = \frac{-5\pi}{9}$$

$$4. 230^\circ \cdot \frac{\pi}{180} = \frac{230\pi}{180} = \frac{23\pi}{18}$$

$$5. 325^\circ \cdot \frac{\pi}{180} = \frac{65\pi}{36}$$

Radians and Degrees Conversions Notes

**Radians to Degrees:** multiply by  $\frac{180}{\pi}$

↙ reciprocal

**Convert from radians to degrees.**

$$1. \frac{5\pi}{12} \cdot \frac{180}{\pi} = \frac{5 \cdot 180}{12} = \boxed{75^\circ}$$

$$2. \frac{7\pi}{9} \cdot \frac{180}{\pi} = \boxed{140^\circ}$$

$$3. \frac{13\pi}{6} \cdot \frac{180}{\pi} = \boxed{390^\circ}$$

$$4. -\frac{3\pi}{5} \cdot \frac{180}{\pi} = \boxed{-108^\circ}$$

$$5. \frac{17\pi}{20} \cdot \frac{180}{\pi} = \boxed{150^\circ}$$

Honors Pre-Calculus

Name \_\_\_\_\_

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**Degrees and Radian Conversions (Unit Circle!)****Convert each degree measure into radians.**

1)  $160^\circ$

2)  $340^\circ$

3)  $265^\circ$

4)  $250^\circ$

5)  $255^\circ$

6)  $305^\circ$

7)  $350^\circ$

8)  $70^\circ$

9)  $-190^\circ$

10)  $-95^\circ$

Convert each radian measure into degrees.

11)  $\frac{16\pi}{9}$

12)  $-\frac{55\pi}{36}$

13)  $-\frac{139\pi}{36}$

14)  $-\frac{4\pi}{3}$

15)  $\frac{23\pi}{6}$

16)  $\frac{13\pi}{18}$

17)  $\frac{25\pi}{12}$

18)  $-\frac{25\pi}{18}$

Radians and Degrees Conversions Notes

shares a terminal side

Find one positive and one negative angle that is coterminal with the given angle:

1)  $\frac{3\pi}{4}$       2)  $\frac{9\pi}{8}$       3)  $\frac{-17\pi}{6}$

$\frac{3\pi}{4} + \frac{8\pi}{4} = \frac{11\pi}{4}$        $\frac{9\pi}{8} + \frac{16\pi}{8} = \frac{25\pi}{8}$        $-\frac{17\pi}{6} + \frac{12\pi}{6} = -\frac{5\pi}{6}$   
 $\frac{3\pi}{4} - \frac{8\pi}{4} = -\frac{5\pi}{4}$        $\frac{9\pi}{8} - \frac{16\pi}{8} = -\frac{7\pi}{8}$        $-\frac{5\pi}{6} + \frac{12\pi}{6} = \frac{7\pi}{6}$

Find an angle between 0 and  $2\pi$  that is coterminal with the given angle:

4)  $\frac{12\pi}{5}$

5)  $\frac{-13\pi}{2}$

6)  $45\pi$  ← odd

$\frac{12\pi}{5} - \frac{10\pi}{5} = \frac{2\pi}{5}$

$-\frac{13\pi}{2} + \frac{16\pi}{2} = \frac{3\pi}{2}$

$\pi$

If Even  $\Rightarrow 2\pi$

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**Coterminal with Radian Measure****Find a positive and a negative coterminal angle for each given angle.**

1)  $-\frac{31\pi}{12}$

2)  $-\frac{5\pi}{4}$

3)  $-\pi$

4)  $-\frac{25\pi}{18}$

5)  $\frac{2\pi}{9}$

6)  $\frac{115\pi}{36}$

**Find a coterminal angle between 0 and  $2\pi$  for each given angle.**

7)  $-\frac{3\pi}{4}$

8)  $\frac{17\pi}{4}$

9)  $-\frac{5\pi}{4}$

10)  $\frac{9\pi}{2}$

