Trigonometry Problem Set

for Class

Rex

1. **Solve the following equation for x, where $0 \leq x < 2\pi$:**

$$3\cos(2x) + 4\cos(x) - 7 = 0$$

Separate multiple solutions by commas. Enter $\emptyset$ if there is no solution. The solution to the equation is:

$$x = 0$$

2. **If $0 \leq \alpha < 2\pi$, find all values of α that satisfy the equation**

$$3\cos(2\alpha) + 11\cos(\alpha) + 7 = 0$$

Separate multiple solutions by commas. Enter $\emptyset$ if there is no solution.

The solutions to the equation are:

$$\alpha = \frac{2\pi}{3}, \frac{4\pi}{3}$$

3. **Solve the following equation for θ on the interval $[0, 2\pi)$:**

$$5\sqrt{3}\tan(\theta) - 4 = 1$$

List the angles separated by commas if there are multiple answers, e.g. $\frac{\pi}{3}, \frac{\pi}{2}$.

The solutions to the equation are:

$$\theta = \frac{\pi}{6}, \frac{7\pi}{6}$$

4. **Determine the exact value of θ in the following equation if $0 \leq \theta < 2\pi$. Enter your answer separated by commas.**

$$-4\cos(\theta) + 5 = 5$$

List the angles separated by commas if there are multiple answers.

The solutions to the equation are:

$$\theta = \frac{\pi}{2}, \frac{3\pi}{2}$$

5. **What are the amplitude and period of the function $f(x) = 3\sin(-9x)$?**

   The amplitude of the function is:

   $$\text{Amplitude} = 3$$

   The period of the function is:

   $$\text{Period} = \frac{2\pi}{9}$$

6. **Solve for θ if $16\sin(\theta) + 11 = 27$ and $0 \leq \theta < 2\pi$.**

   The solution to the equation is:

   $$\theta = \frac{\pi}{2}$$

7. **Solve for θ if $2\cos(\theta) + 8 = 10$ and $0 \leq \theta < 2\pi$. Enter your answer(s) in radians. If necessary, separate multiple values by commas.**

   The solution to the equation is:

   $$\theta = 0$$

8. **Solve the following equation for θ on the interval $[0, 2\pi)$:**

$$-7\sqrt{3}\tan(\theta) + 2 = 9$$

Enter your answer(s) in radians. If necessary, separate multiple values by commas.

The solutions to the equation are:

$$\theta = \frac{5\pi}{6}, \frac{11\pi}{6}$$

9. **Solve the following equation for θ on the interval $[0, 360^\circ)$:**

$$-5\sec(\theta) - 4 = -14$$

Select all correct answers.

- 300°
- 30°
- 0°
- 60°
- 135°
- 120°

The solutions to the equation are:

$$\theta = 60^\circ, 300^\circ$$