

1 (15 points)

(a) (5 points) Convert -240° to radians.

(b) (5 points) Find a positive angle less than 360° that is coterminal with -240° .

(c) (5 points) Find the value of $\cos(-240^\circ)$.

2 (10 points)

(a) (5 points) Find a positive angle less than 2π that is coterminal with $\frac{19\pi}{4}$.

(b) (5 points) Find the value of $\sin(\frac{19\pi}{4})$.

3 (15 points)

(a) (5 points) Find the value of $\sin^2(10^\circ) + \sin^2(80^\circ) - 1$.

(b) (5 points) If $\sin = \frac{\text{opposite}}{\text{hypotenuse}}$, explain why sine can never be greater than one.

(c) (5 points) Use the reference angle to find the exact value of $\cot(-\frac{\pi}{4})$.

4 (10 points) A circle has a radius 8 feet. Find the length of the arc intercepted by a central angle of 270° .

5 (20 points)

(a) (5 points) If $\sin(\theta) = \frac{\sqrt{3}}{3}$, and θ is an acute angle, then find $\tan(\theta)$.

(b) (5 points) Find exact value of $\sec(35^\circ) \cos(35^\circ)$.

(c) (5 points) Find exact value of $\sec(60^\circ) \tan(45^\circ) + \csc(30^\circ)$.

(d) (5 points) Find the exact value of $\csc(40^\circ) \sec(50^\circ) - \tan(50^\circ) \cot(40^\circ)$.

6 (10 points) If the point $(-3, -4)$ is on the terminal side of an angle θ , then find the exact values of $\cot(\theta)$ and $\sec(\theta)$.

7 (10 points) If $\tan(\theta) = -\frac{4}{5}$, and $\cos(\theta) < 0$, then find the exact values of $\cos(\theta)$ and $\csc(\theta)$.