

Instructions Do all your work within your blue books. Write your name on only the outside of your blue books. Good luck.

1. (10 points)

(a) Convert the angle $\theta = 25\pi/6$ to degrees.

(b) In which quadrant does the angle θ lie?

(c) What is the $\sin(\theta)$?

2. (5 points) Compute the exact value of $\text{Arctan}(-\sqrt{3})$ as an angle in radians.

3. (5 points) Compute $\text{Arccot}(-1.875)$.

4. (10 points) Suppose that θ and ϕ are angles in the 1st quadrant, $\sin(\theta) = 8/17$, and that $\cos(\phi) = 3/5$. Compute $\sin(\theta + \phi)$.

5. (10 points) Simplify $\cos(A + B) - \cos(A - B)$.

6. (10 points) Verify the identity:

$$\frac{1 - \sin(x)}{\cos(x)} = \frac{\cos x}{1 + \sin x}$$

7. (10 points) Verify the identity:

$$\frac{\sin x + \cos x}{\sec x + \csc x} = \sin(x)\cos(x)$$

8. (10 points) Find all solutions for $0 \leq x < 2\pi$,

$$4 \cos^2(x) = 3$$

9. For each of the following functions (*10 points each function*): **Indicate your answers clearly!**

- Determine the amplitude;
- Determine the point at which the cycle begins;
- Determine the point at which the cycle ends;
- Determine the y -intercept;
- Sketch the graph and include at least two full cycles.

(a) $y = -3 \sin(x)$

(b) $y = 5 \cos\left(\frac{\pi}{2}x\right) + 10$

(c) $y = \sin\left(x - \frac{\pi}{4}\right)$