

Please show your work, circle your answer, and leave all numbers as fractions.

No calculators are allowed.

1) Simplify $(\cos(x) - 1)(\cos(x) + 1)$ by expanding it into a sum of terms. (5 points)

2) Find the number below by expressing it as a single reduced fraction. (5 points)

$$\frac{\frac{1}{2} + \frac{5}{7}}{\frac{1}{2}}$$

3) Verify the identity below. (10 points)

$$\cos(x) \tan(x) = \sin(x)$$

4) Find $\sin(240^\circ)$. (5 points)

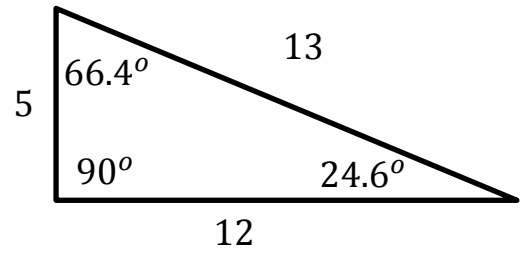
5) Find the number below by expressing it as a single reduced fraction. (5 points)

$$\frac{\frac{1}{3}}{6}$$

6) Verify the identity below. (10 points)

$$\tan(x) + \cot(x) = \sec(x) \csc(x)$$

7) Use the triangle given here to find $\sin(24.6^\circ)$. (10 points)



8) Verify the identity below. (10 points)

$$\sin^3(x) \csc(x) + \cos^3(x) \sec(x) = 1$$

9) Find $\sin(15^\circ)$. (5 points)

10) Find $\cos(285^\circ)$. (5 points)

11) Find $\tan\left(\frac{7\pi}{12}\right)$. (5 points)

12) Find $\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$. (5 points)

13) Solve the equation below for x . (10 points)

$$\cos(x) = \frac{\sqrt{3}}{2}$$

14) Solve the equation below for x . (10 points)

$$(\sin(x) - 1)(2 \sin(x) + 1) = 0$$