1. Find the exact values of sine, cosine and tangent evaluated at the following numbers: \(0, \frac{\pi}{6}, \frac{\pi}{4}, \frac{\pi}{3}, \frac{2\pi}{3}, \frac{\pi}{2}, \frac{3\pi}{4}, \frac{5\pi}{6}\) etc.

2. The domain of sine is \(_______\), the range of sine is \(_______\)

3. The domain of cosine is \(_______\), the range of cosine is \(_______\)

4. The domain of tangent is \(_______\), the range of tangent is \(_______\)

5. The period of sine and cosine is \(_______\), the period of tangent is \(_______\).

6. Sine is an odd function which means \(_______\).

7. Cosine is an even function with means \(_______\).

8. The graph of \(y = \sin x\) looks like

9. The graph of \(y = \cos x\) looks like

10. For the function \(3\sin(4\pi x)\) the period is \(_______\) and the amplitude is \(_______\). Therefore, the graph of \(y = 3\sin(4\pi x)\) looks like:

11. For the function given by the following graph, the period is \(_______\) and the amplitude is \(_______\).

12. The graph above is the graph of the function \(_______\).

13. Find the exact values of arcsine and arccosine at the following numbers: \(0, \frac{1}{2}, \frac{\sqrt{3}}{3}, \frac{\sqrt{2}}{2}, 1\) etc.
14. The domain of arcsine is _________, the range of arcsine is _________

15. The domain of arccosine is _________, the range of arccosine is _________

16. The domain of arctangent is _________, the range of arctangent is _________

17. Find \( \sin \left( \cos^{-1} \left( \frac{1}{2} \right) \right) \) or more generally \( \sin \left( \cos^{-1} (x) \right) \), \( \tan \left( \sin^{-1} (x) \right) \) etc.

18. Solve a right triangle with one side 10 and the opposite angle 25 degrees.

19. Solve a right triangle with one side 8 and the hypotenuse 15.

20. Evaluate the remaining trigonometric functions of \( x \) if \( \sin x = \frac{1}{2}, \tan x = \frac{1}{\sqrt{3}} \)

21. Evaluate the remaining trigonometric functions of \( x \) if \( \sin x = \frac{5}{13}, \sec x < 0 \)

22. Factor and simplify: \( \sin^2 x \csc^2 x \sin^2 x \)

23. Add and simplify: \( \frac{1}{1 + \cos x} + \frac{1}{1 - \cos x} \)

24. Starting with the identity \( \sin^2 x + \cos^2 x = 1 \) derive an identity for \( \csc x \)

25. Use the trigonometric substitution \( u = 2 \sin \theta \) to write the algebraic expression \( \sqrt{4 - u^2} \) as a trigonometric function of \( \theta \)

26. Verify the identity \( \cos x + \sin x \tan x = \sec x \)

27. Verify the identity \( \frac{1}{\sin x + 1} + \frac{1}{\csc x + 1} = 1 \)

28. Graph something annoying like \( y = -2 \cos \left( \pi x - \frac{\pi}{2} \right) + 3 \)