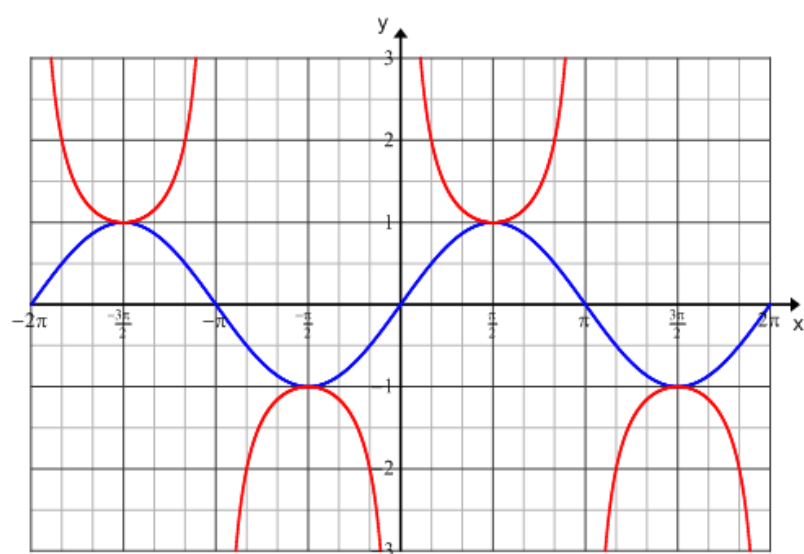


# MHF 4UI - EXAM REVIEW

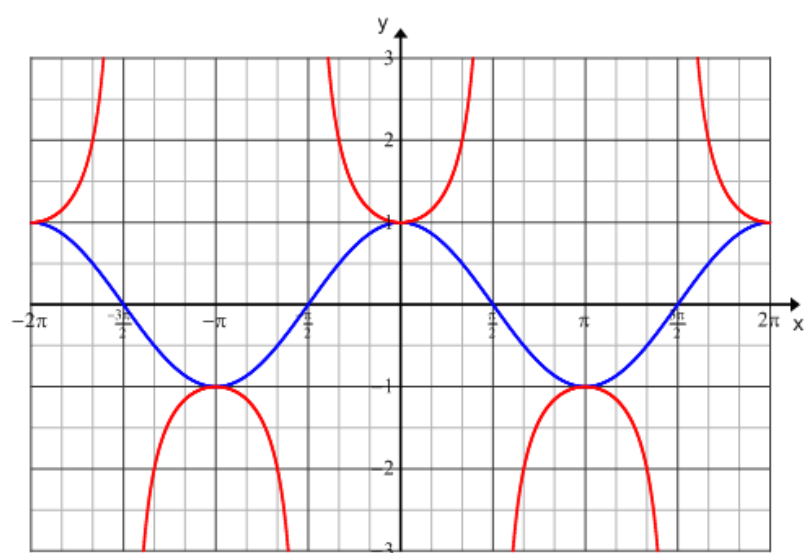
## Chapter 5 - Trigonometry

## Graphing Sinusoidal Functions (in Radians)



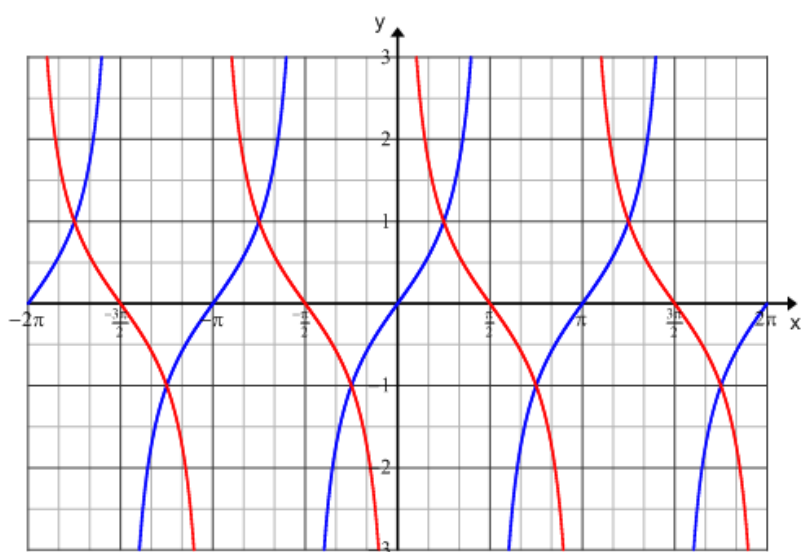
$$y = \sin x$$

$$y = \csc x$$



$$y = \cos x$$

$$y = \sec x$$



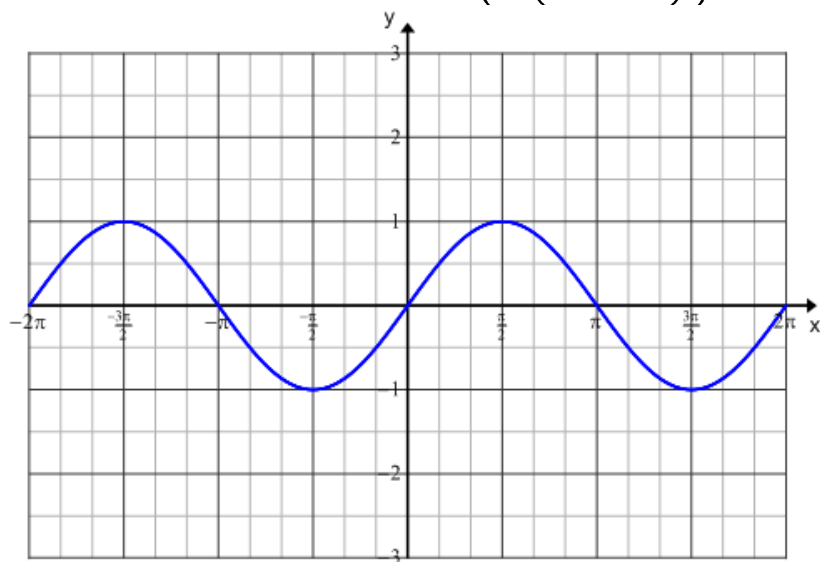
$$y = \tan x$$

$$y = \cot x$$

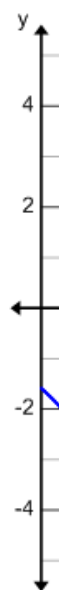
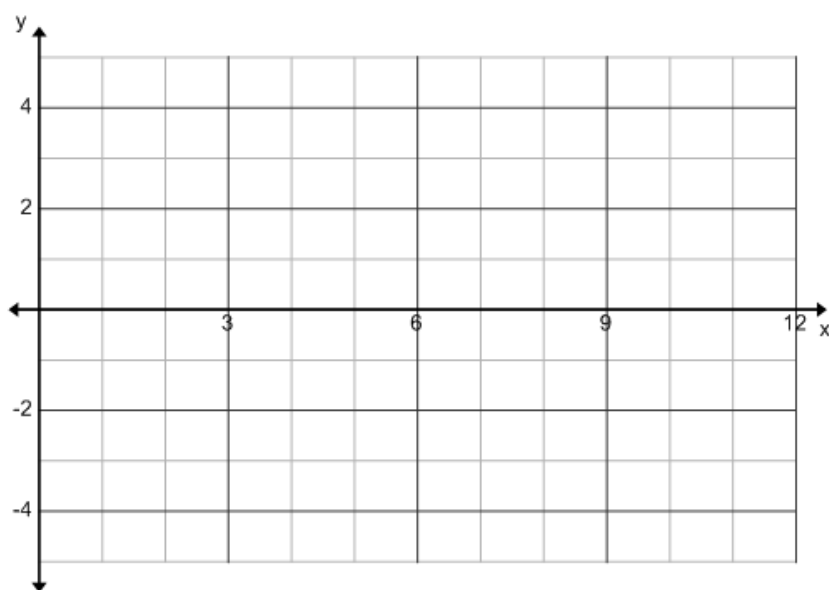
## Transformations of Sinusoidal Functions

(only transformations on  $y = \sin x$  and  $y = \cos x$ )

Example: Graph  $y = -2 \sin \left( 3 \left( \theta + \frac{\pi}{4} \right) \right) - 1$



Example: Graph  $y = 2 \cos \left( \frac{2\pi}{8} (t + 1) \right) - 3$



**Applications:**

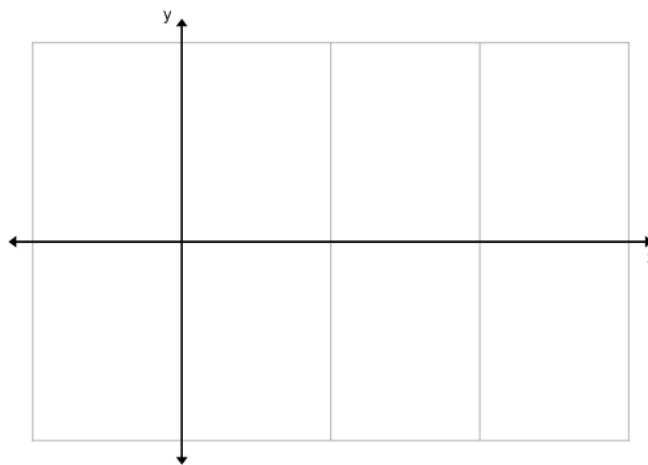
\*\*This is the example from your notes on applications in Unit 5.

**Tide problem:**

At a certain point on the beach, a post sticks out of the sand. The post sticks out of the ground 76cm. The depth of the water at the post varies sinusoidally with time due to the motion of the tides and is given by the equation:

$$d = 60 \cos \frac{2\pi(t-2)}{12} + 40$$

a) Sketch the graph:



b) Solve the equation for t in terms of d:

c) What is the earliest time of day the water level is just at the top of the post?

d) Between what times will the post be completely out of the water?