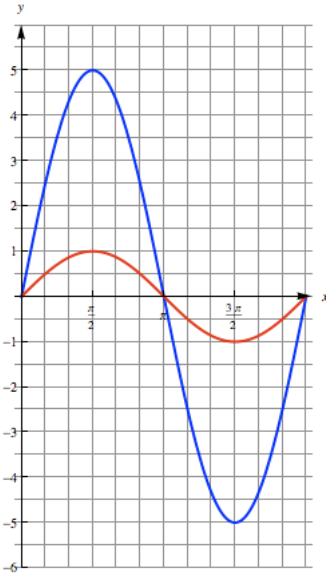


PRECALCULUS PROBLEM SESSION #10 SOLUTIONS

Graphs of Sine and Cosine Functions

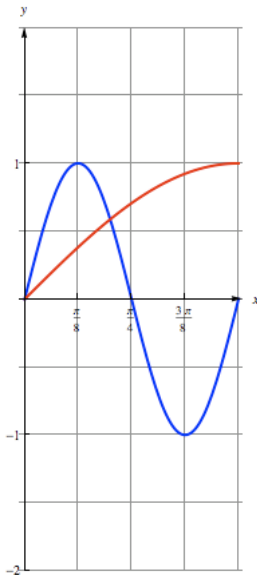
1. If $|A| > 1$ it stretches the graph in the vertical direction, if $|A| < 1$ it compresses the graph vertically; B changes the period of the graph, therefore, stretching it or compressing it horizontally; C influences the horizontal translation of the graph, and D translates the graph vertically.
2. One way would be to simply shift the sine graph $\frac{\pi}{2}$ units to the left.

3. $y = 3\sin \frac{1}{2}x$

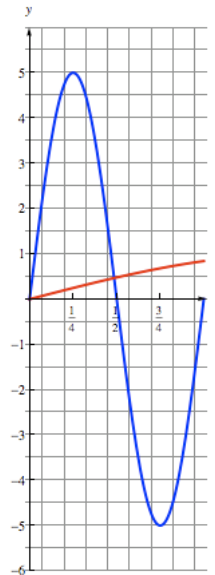


The graph of $y = 5\sin x$ is given in blue.
The function has an amplitude of 5.

4.



5. (a)



(b)

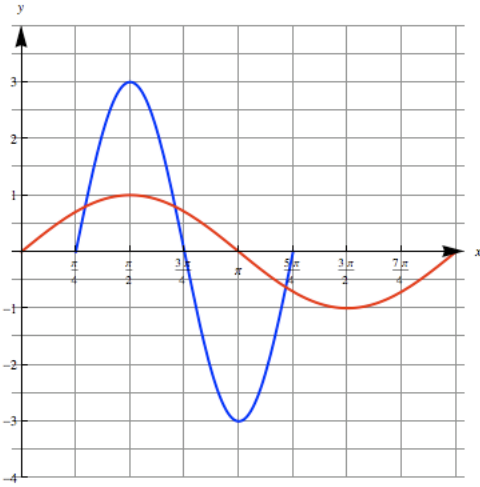
The graph of $y = \sin 4x$ is given in blue.

The function has an amplitude of 1 and a period of $\frac{\pi}{2}$.

The graph of $y = 5\cos 2\pi x$ is given in blue.

The function has an amplitude of 5 and a period of 1.

PRECALCULUS PROBLEM SESSION #10 SOLUTIONS

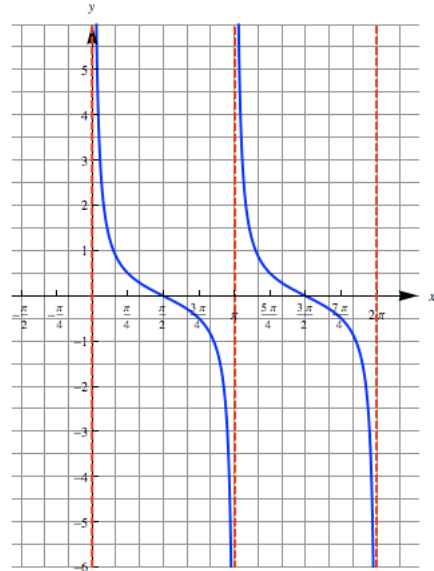
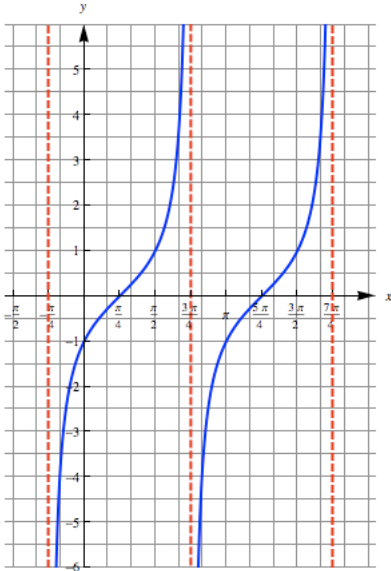


The graph of $y = 3 \sin (2x - \pi / 2)$ is given in blue.

The function has an amplitude of 3, a period of π and a phase shift of $\pi/4$.

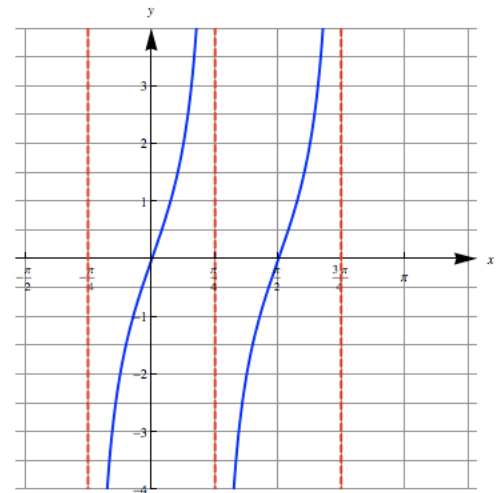
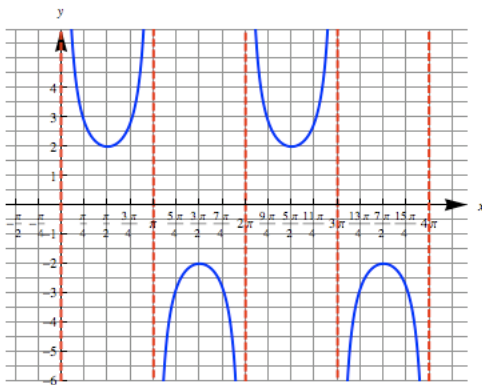
6.

Graphs of Other Trigonometric Functions



1. a)

b)



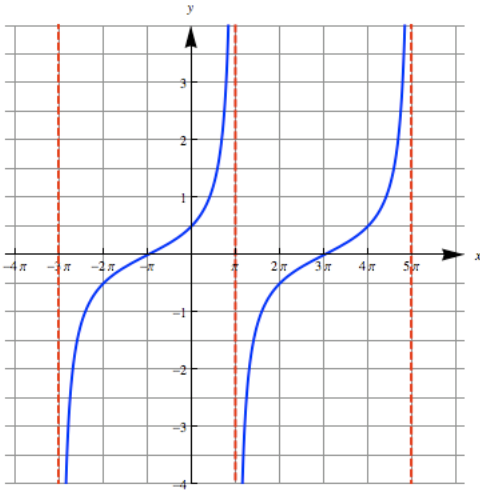
c)

d)

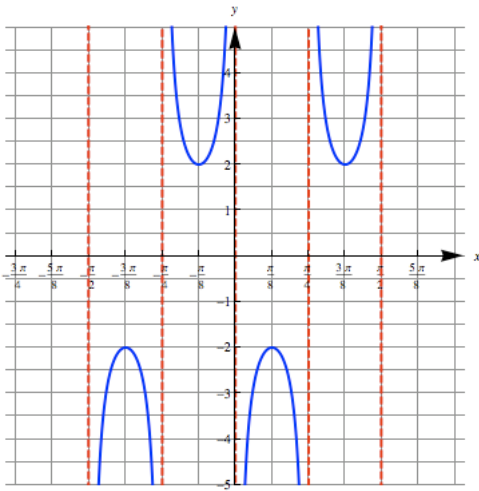
PRECALCULUS PROBLEM SESSION #10 SOLUTIONS

2. One way would be to reflect the tangent graph over the x-axis and then shift $\frac{\pi}{2}$ units to the left.

3. (a) $y = \frac{1}{2} \tan\left(\frac{x}{4} + \frac{\pi}{4}\right)$ Period: 4π Phase shift: $-\pi$



(b) $y = -2 \sec\left(4x - \frac{\pi}{2}\right)$ Period: $\frac{\pi}{2}$ Phase shift: $\frac{\pi}{8}$



4. $y = -\tan x$