

MATH 135 – Calculus 1
Practice on Trigonometric Functions
September 7, 2016

Background

In the video and class today, we have seen a “lightning review” of trigonometry. To practice on some ideas related to this, do the following problems.

Questions

1) Sinusoids

- (a) Starting from the graph $y = \sin(x)$ and using scaling and shifting, sketch the graph $y = 3 \sin\left(\frac{x}{2}\right) - 1$ on the interval $[0, 8\pi]$.
 - (b) The graph in part (1) is an example of a *sinusoid* (or sine-wave graph). The *amplitude* of a sinusoid is one-half the vertical distance between the minimum and maximum values. What is the amplitude of your sinusoid in (1)?
 - (c) The *period* of a sinusoid $f(x)$ is the *smallest strictly positive number* T for which it is true that $f(x + T) = f(x)$ for all x . For example the period of $f(x) = \cos(x)$ is $T = 2\pi$. What is the period of the sinusoid from part (1)?
 - (d) Give a formula defining a sinusoid with amplitude $A = 7$ and period $T = 5\pi$.
- 2) Sketch the portion of the graph $y = \cot(x) = \frac{\cos(x)}{\sin(x)}$ for $0 < x < \pi$. How are $\tan\left(x - \frac{\pi}{2}\right)$ and $\cot(x)$ related?