Math 140 Practice Exam 4
Write angles in exact radians, no decimals, no degrees.

1(10). For the graph below, find the amplitude, find the period, and find an equation of the form \( y = \pm A\sin(Bx) \) or \( y = \pm A\cos(Bx) \).

2(14). Graph \( y = -2\sin(\pi x - \pi) \).

3(9). Graph \( y = \tan(-x/2 + \pi) \) over one period. List the x-intercepts and the vertical asymptotes which occur in this period.

4(9). Graph \( y = \sec(x + \pi) \). Draw the asymptotes as dotted lines. Be prepared to graph cot and csc.

5(6). Simplify \( \sin(x + y)\cos x - \cos(x + y)\sin x \).

6(6). Simplify \( \frac{\tan(\pi/5) - \tan(\pi/30)}{1 + \tan(\pi/5)\tan(\pi/30)} \).

7(12). \( x = (\sin \theta)/2, \ \frac{\pi}{2} < \theta < \pi. \)
   (a) Find \( \sin 2\theta \)
   (b) Find \( \sin(\theta/2) \)
   (c) Find \( \tan(\theta/2) \)

8(5). Write as a sum or difference of trig functions.
   \( \cos(x - 1)\sin(x + 1) \)

9(5). Find all solutions to \( \cos \theta + \frac{\sqrt{3}}{2} = 0. \)
   Two sets of solutions.

10(10). Find all solutions of \( 2\sin^2 x + 5\cos x = 4. \)
   Two sets of solutions.

11(14). Find the exact value (no decimals) of
   (a) \( 3\) \( \cos^{-1}(-\sqrt{3}/2) \)
   (b) \( 3\) \( \tan^{-1}(-\sqrt{3}) \)
   (c) \( 4\) \( \sin^{-1}(\sin(\frac{5\pi}{7})) \)
   (d) \( 4\) \( \tan(\arcsin(\frac{3}{5})) \)