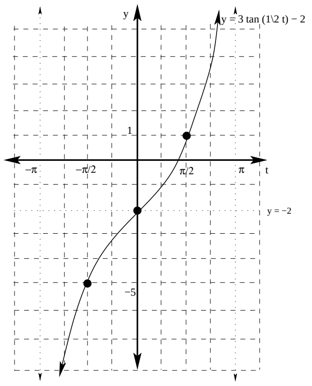
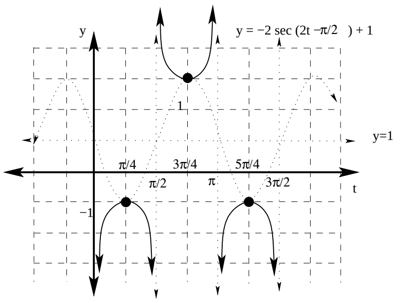
Math 143, Section 2
Quiz 3 - Solutions **Name:**________________________________

1. In the space below, carefully draw the graphs of the following:

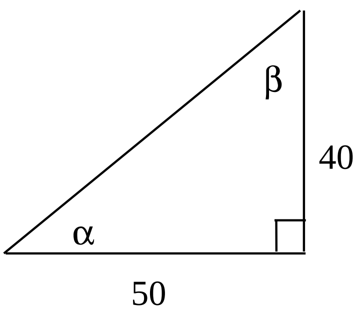
   (a) (3 points) $y = 3\tan(\frac{1}{2}t) - 2$
   Notice that this graph have been stretched vertically by a factor of 3, and shifted down 2. Also, the period is: $\frac{\pi}{\frac{1}{2}} = 2\pi$. We also see that if $-\frac{\pi}{2} \le \frac{1}{2}t \le \frac{\pi}{2}$, then $-\pi \le t \le \pi$, so the asymptotes to this graph are all multiples of π.
   Therefore, the graph is as follows:



   (b) (4 points) $y = -2\sec(2t - \frac{\pi}{2}) + 1$
   Recall, that the easiest way to graph this is to look at the related function $y = -2\cos(2t - \frac{\pi}{2}) + 1$
   For this graph, the amplitude is 2, the period is $\frac{2\pi}{2} = \pi$, the midline is $y = 1$, the phase shift is $-\frac{-\frac{\pi}{2}}{2} = \frac{\pi}{4}$, and the graph has been reflected vertically. We also see that since $0 \le 2t - \frac{\pi}{2} \le 2\pi$, then $\frac{\pi}{2} \le 2t \le \frac{5\pi}{2}$, so $\frac{\pi}{4} \le t \le \frac{5\pi}{4}$ gives one period of this graph.
   Therefore, the graph is as follows:



2. (3 points) Find all missing sides and angles in the triangle below. Round your answers in two decimal places.



To find c, we use the Pythagorean Theorem: $c^2 = 50^2 + 40^2$, so $c = \sqrt{2500 + 1600} \approx 64.03$
Next, notice that $\tan\alpha = \frac{40}{50}$, so $\alpha = \tan^{-1}(\frac{40}{50}) \approx 38.66°$.
Finally, recall that $\beta = 90° - \alpha° \approx 90° - 38.66° = 51.34°$