Read each problem **very carefully** before starting to solve it and do only what is asked. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points] The graph shown is a transformed version of $y = \tan x$. Find a formula for the function, showing clearly all steps used to identify the parameters A, B, C and D.
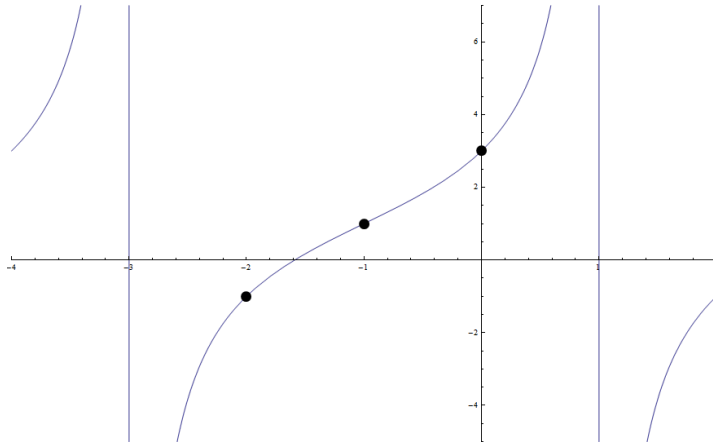
2. [4 points] Consider $f(x) = 3 \csc \left(\frac{\pi}{5} x + \frac{2\pi}{5} \right)$. Show all steps in identifying the stretch factor, the period, the phase shift and the midline, and then sketch the graph in a single period.

3. [4 points] We want to compute the value of $\tan\left(\cos^{-1}\left(-\frac{1}{5}\right)\right)$ by hand. To do this, we set $\theta = \cos^{-1}\left(-\frac{1}{5}\right)$ and we want to compute $\tan\theta$.

    (a) Write the two conclusions that can be drawn solely from the equation $\theta = \cos^{-1}\left(-\frac{1}{5}\right)$ about the angle θ.

    (b) Use the information about θ you derived in Part (a) to compute $\tan\theta$. (Hint: Use your skills working with right triangles!)