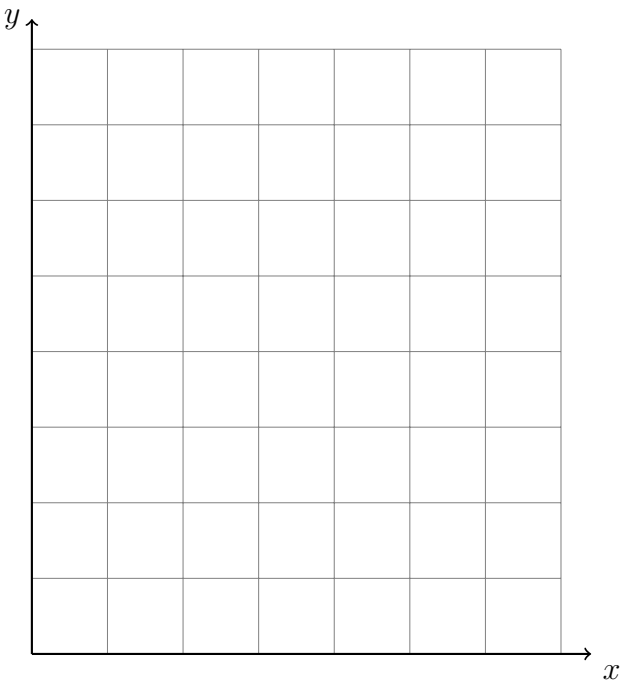
7.3 Do Now: Slope and the tangent function, similar triangles

1. (a) Graph and label $\triangle ABC$ with $A(0,0)$, $B(4,7)$, and $C(4,0)$. Calculate each length:

   i. $AC =$

   ii. $BC =$

   iii. $AB =$



   (b) Write down the equation of the line $\overleftrightarrow{BC}$.

   (c) Write down the equation of the line $\overleftrightarrow{AB}$.

   (d) The tangent of an angle is the ratio of the side lengths *opposite* over *adjacent* to the angle. Write down the value as a fraction.

   $\tan \angle BAC =$

   (e) Find $m\angle BAC$ with a calculator's inverse tangent function, $m\angle BAC = \tan^{-1}(\frac{opp}{adj})$

2. Express the result to the nearest thousandth.

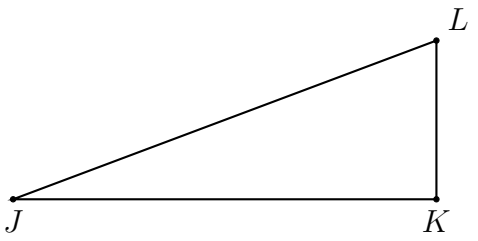
   (a) $\tan 34^\circ =$ (b) $\tan 60^\circ =$

3. Round each value to the nearest degree.

   (a) $\tan^{-1}(1) =$ (b) $\tan^{-1}(\sqrt{3}) =$

4. Given right $\triangle JKL$ with $\overline{JK} \perp \overline{KL}$, $JK = 8$, $m\angle J = 22^\circ$. (mark the diagram)

   (a) Let x be the length of the side opposite $\angle J$, $x = KL$. Write an equation expressing $\tan \angle J$ as a ratio of *opposite* over *adjacent*.



   (b) Solve the equation for $x = KL$.

   (c) Use the Pythagorean formula to find the length JL