BECA / Dr. Huson / Geometry 10-Trig+similarity+analytic Name:
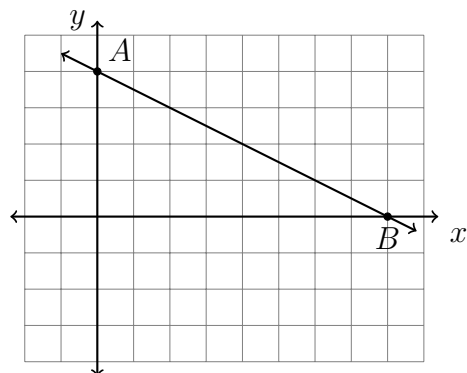pset ID: 166

10-1bDN-Trig

1. A dilation centered at the origin with scale factor $k = \frac{1}{2}$ maps $\overleftrightarrow{AB} \to \overleftrightarrow{A'B'}$.

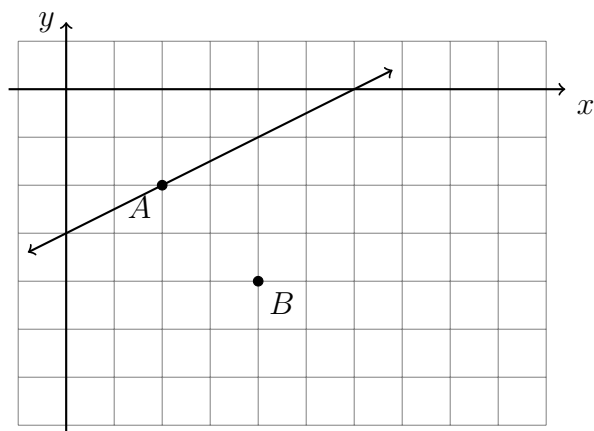   (a) Draw and label the image.

   (b) What are the y-intercepts of $\overleftrightarrow{A'B'}$ and $\overleftrightarrow{AB}$?

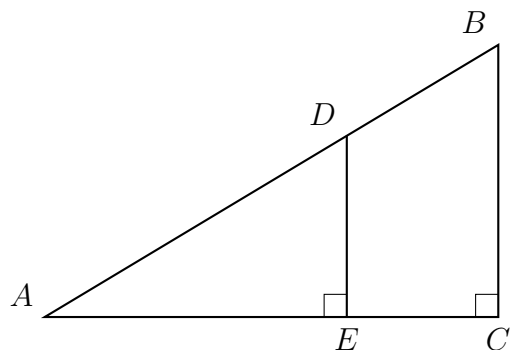   (c) What are their slopes?

   (d) Write down the equations of the two lines.

2. A line through the point $A(2, -2)$ has a slope $m = \frac{1}{2}$. A dilation centered at the origin maps $A \to B$ as shown. Draw the image the line. Write the equations of both lines.

3. In $\triangle ABC$ shown below, $\angle ACB$ is a right angle, E is a point on $\overline{AC}$, and $\overline{ED}$ is drawn perpendicular to leg $\overline{AC}$. If $AC = 8$, $BC = 6$, and $DE = 4$, what is the length of $\overline{AE}$?

4. Express the result to the nearest thousandth.

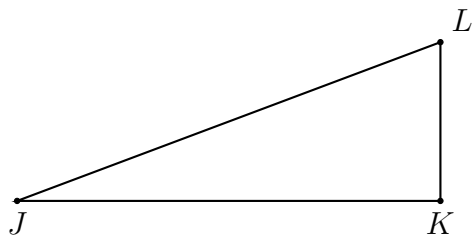   (a) $\tan 67° =$

   (b) $\tan 45° =$

5. Round each value to the nearest degree.

   (a) $\tan^{-1}(0.75) =$

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

6. Given right $\triangle JKL$ with $\overline{JK} \perp \overline{KL}$, $JK = 8$, $m\angle J = 22°$. (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