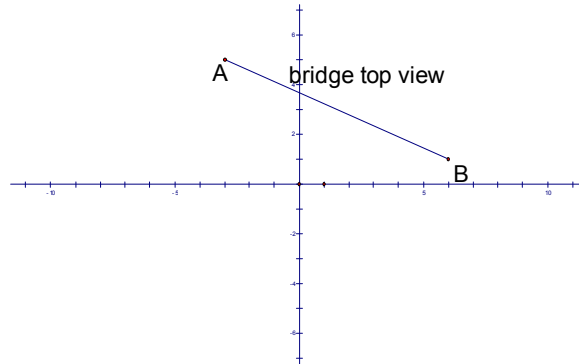


Problem Set #3
Partner In-Class Part

Name _____

Directions: You and your assigned partner will be given time to discuss and solve these problems together. Both of you will then write up your own solutions and hand in separate test papers. There is no guarantee that you will get the same grade as your partner, so write carefully and show all work.

1. Suppose that one leg of a right triangle is 1 more than the other leg; and the hypotenuse is 1 less than 2 times the shorter leg. Find the lengths of all the sides. Please include a diagram and algebraic work shown. (8 pts.)
2. A bridge is being built across a river and the engineers need to plan where to put the supports. There must be two supports at the ends and two more that are $\frac{1}{3}$ of the way from each end support potentially in the river. If the end supports of the bridge will be placed at $A=(-3,5)$ and $B=(6,1)$, find the coordinates where the engineers should place the other two remaining supports. (8 pts.)



3. A frog is sitting at the origin of a coordinate plane and spies a bug flying along the line $2x+5y=8$. If the frog is lazy and must wait until the bug is closest in order for his long sticky tongue to catch the fly, what point would the bug be at when he gets caught? (8 pts.)

Problem Set #3
Individual Take Home Part

Name _____

Directions: You are no longer working with your partner. These problems are to be done by you alone with help only from your journal or communication with Ms. Schettino. Please show all work for full credit on each problem. By signing below, you are stating that you understand and have complied with the directions of this take-home portion.

Signed _____

1. Find the point or points on the line $y=2x+5$ that is (are) equidistant from the coordinate axes. (6 pts.)

2. Create a vector \vec{AB} of your choosing. With that vector \vec{AB} , find the following:
 - a. the components of the vector \vec{BA} (2 pts.)
 - b. the length of \vec{AB} (2 pts.)
 - c. the components of the vector in the same direction as \vec{AB} but has half the length (3 pts.)
 - d. the components of the vector that is in the same direction as \vec{AB} but has length 1 (the unit vector in that direction) (3 pts.)
 - e. the components of the vector in the same direction as \vec{BA} , but with length 10 (4 pts.)

3. You are given the triangle ABC with coordinates $A=(-7,6)$, $B=(-4,3)$ and $C=(0,9)$ and triangle PQR with coordinates $P=(3,-8)$, $Q=(0,-5)$ and $R=(6,-1)$. Write a valid argument as to why $\angle B \cong \angle Q$. Be sure to justify your statements with valid criteria stating why triangles and their parts are congruent. (8 pts.)