

Math 173 - Extra Credit

February 14, 2019

Name key

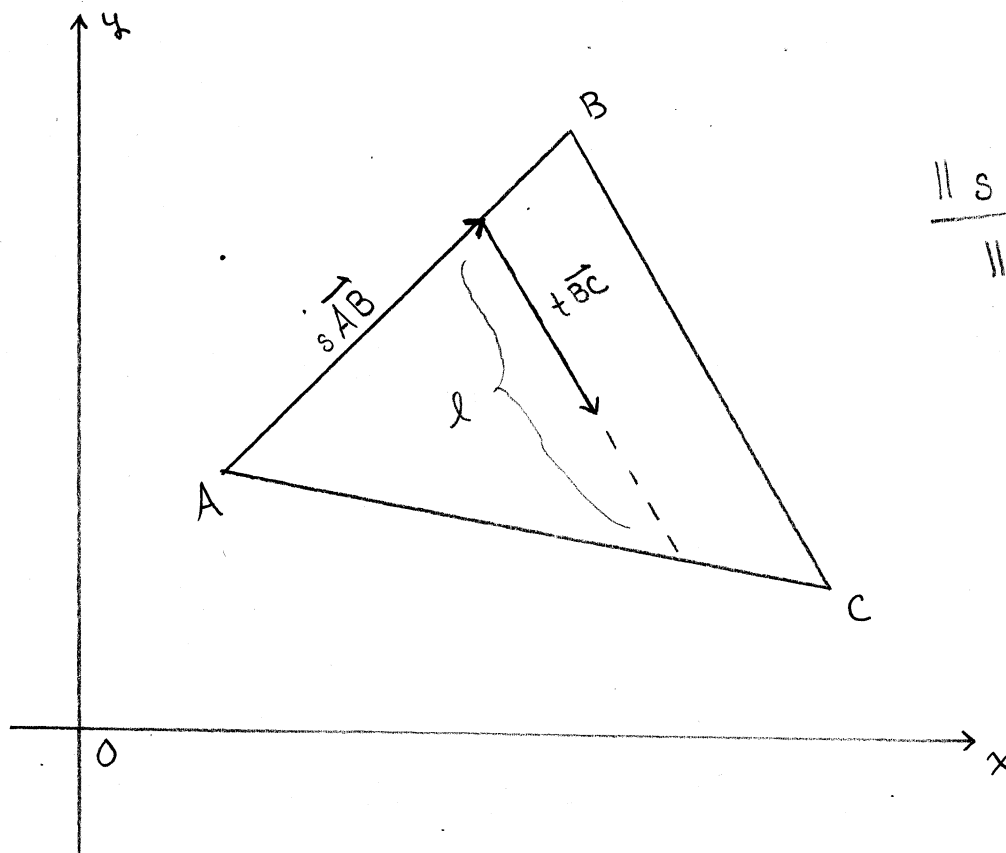
Score _____

Show all work to receive full credit. Supply explanations when necessary. This problem is worth 1 extra credit point. It is due Monday, February 18, 2019.

Suppose A , B , and C are the vertices of a triangle in the xy -plane, and let O be the point at the origin. Given that $0 < s < 1$, determine the conditions on t for which the tip of the vector

$$\vec{OA} + s\vec{AB} + t\vec{BC}$$

lies strictly inside the triangle. (Hint: It may help to sketch the vectors and think about similar triangles.)



$$\frac{\|s\vec{AB}\|}{\|\vec{AB}\|} = \frac{\|l\vec{BC}\|}{\|\vec{BC}\|}$$

$$s = l$$

For the tip of
 $\vec{OA} + s\vec{AB} + t\vec{BC}$
to lie inside
the triangle,
we must
have

$$0 < t < s.$$

If $t = 0$, the tip lands on
 \overline{AB} .

If $t = s = l$, the tip lands on
 \overline{AC} .