

Problem. Using vectors, prove the Law of Sines: if \mathbf{a} , \mathbf{b} , and \mathbf{c} are the three sides of the triangle shown in the figure, then

$$\frac{\sin A}{\|\mathbf{a}\|} = \frac{\sin B}{\|\mathbf{b}\|} = \frac{\sin C}{\|\mathbf{c}\|}.$$

(*Hint:* Use the relation between cross products and triangle areas.)

