Exercise. Prove the "Parallelogram Rule for Addition" of vectors in $\mathbb{R}^2$. In other words:

Consider Figure 1 where O is the origing of the coordinate systm, A has coordinates (a_1, a_2), B has coordinates (b_1, b_2) and $OACB$ is a paralleogram. Prove that C has coordinates $(a_1 + b_1, a_2 + b_2)$.

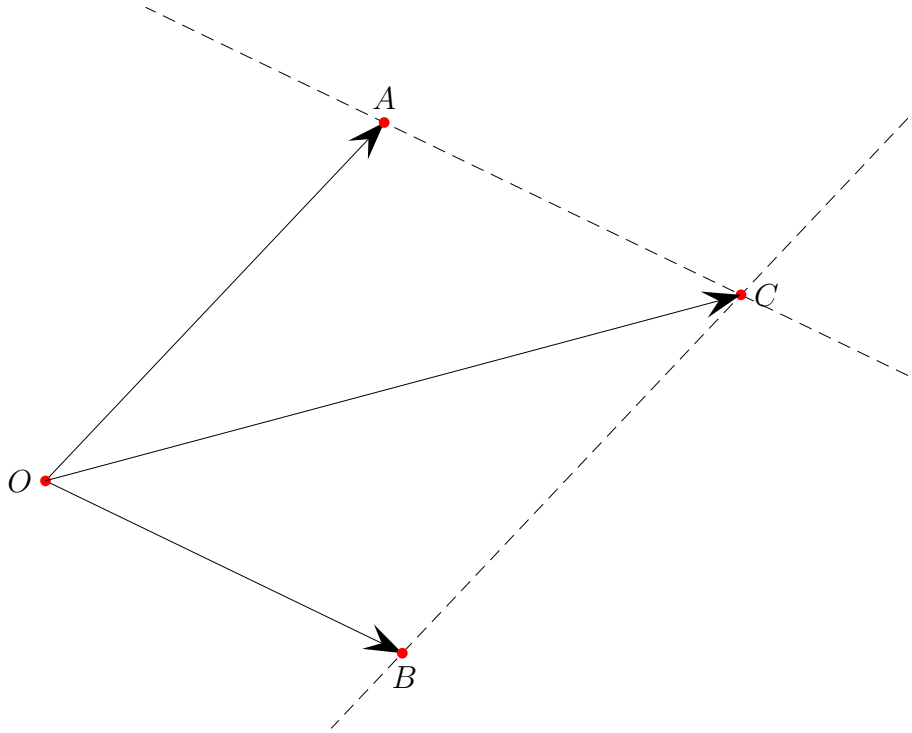

FIGURE 1. The parallelogram rule

Hint. Find equations for the lines AC and BC and then solve the resulting 2×2 system.