1. Let $\boldsymbol{a} = \langle 5, 2\rangle$ and $\boldsymbol{b} = \langle -3, 2\rangle$.

   (a) Make a reasonably large and accurate sketch of these vectors, then draw the vector projections $\text{proj}_{\boldsymbol{b}}\boldsymbol{a}$ and $\text{proj}_{\boldsymbol{a}}\boldsymbol{b}$. Make estimates of these vector projections based on your drawings.

   (b) Find the actual projections $\text{proj}_{\boldsymbol{b}}\boldsymbol{a}$ and $\text{proj}_{\boldsymbol{a}}\boldsymbol{b}$ and compare them with your estimates. How good were your estimates?

2. If a constant force $\boldsymbol{F}$ acts on an object so as to displace it a distance d in the direction of the force, the work done by $\boldsymbol{F}$ on the object is defined to be $\|\boldsymbol{F}\|d$. If the constant force does not act along the direction of the displacement $\boldsymbol{d}$, we define the work done by the force on the object as the product of the component of the force $\boldsymbol{F}$ along the displacement $\boldsymbol{d}$ times the distance $d = \|\boldsymbol{d}\|$ the object is displaced.

   Find the work done by a force $\boldsymbol{F} = \langle 2, -3, 6\rangle$ acting on an object so as to displace it from the point $P(-1, 1, 0)$ to the point $Q(3, 5, 7)$.