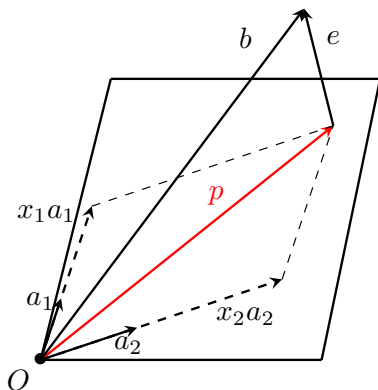


Projections onto Planes

In preparation for studying projections onto general subspaces of \mathbb{R}^n , we use calculus here to find the projection of a vector b onto the span of vectors a_1 and a_2 . Here is the appropriate figure:



$$p = x_1 a_1 + x_2 a_2 = Ax$$

$$\text{where } A = \begin{bmatrix} | & | \\ a_1 & a_2 \\ | & | \end{bmatrix}$$

$$\text{and } x = \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$$

$$e = b - p = b - Ax$$