

Projection

(1) What is the projection of $\vec{u} = (5, 2, 10)^\top$ onto the plane T characterized by $2x + y + 3z = 0$?

Procedure:

1. Find a vector in the plane. Choose x, y arbitrarily, then calculate z . Call this vector v_1 .
2. Find another vector in the plane and make sure it is linearly independent of v_1 . Call it v_2 .
3. You know the following about u_H . Use it to find the coordinates of u_H by forming a system of linear equations.
 - (a) u_H is in the plane
 - (b) $u - u_H \perp v_1$
 - (c) $u - u_H \perp v_2$