1. The system of equations

$$x - y + z - w = 1$$
$$x + y - z - w = 3$$

determines a two–dimensional plane in $\mathbb{R}^4$. Let $T(0, -1, -1, 2)$. Our objective is to find the point on the plane which is closest to T.

   (a) Write the matrix A and the right-hand side $\mathbf{b}$ of the system above.

   (b) Evaluate A^+. (This is simple since A has full rank).

   (c) Show that $P = I - A^+A$ is an orthogonal projection, meaning that $P^2 = P$ and $P^\mathsf{T} = P$. Onto which subspace does it project?

   (d) Express and compute the solution using A^+.

   (e) Write the function `pT = projekcija(A, b, T)`, which returns the projection of the point T on to the hyperplane defined by the system $A\mathbf{x} = \mathbf{b}$.