1. Identify the type of conic section whose equation is given and find vertices of foci.

   (a) $\frac{x^2}{4} + y^2 - x - 2y + 1 = 0$

   (b) $y^2 - x - 2y + 1 = 0$

2. Let $\mathbf{a} = \langle 1, 1 \rangle$ and $\mathbf{b} = \langle 1, 0 \rangle$.

   (a) Let $\mathbf{c} = \langle 5, 2 \rangle$. Show, by means of a sketch, that there are scalars s and t such that $\mathbf{c} = s\mathbf{a} + t\mathbf{b}$.

   (b) Find the values of s and t.

   (c) Can you find s, t when $\mathbf{a}, \mathbf{c}$ remains the same but $\mathbf{b} = \langle -2, -2 \rangle$?