**Math 53 (Multivariable Calculus), Section 102 & 108**
**Week 4, Monday**
**Sep 12, 2022**
**For the other materials: seewoo5.github.io/teaching/2022Fall**

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1. Identify the type of conic section whose equation is given and find vertices and 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 $\mathbf{b} = \langle -2, -2 \rangle$?