

**Class Exercise 8**

Let

$$\mathbf{F} = \frac{1}{x^2 + y^2}(x\mathbf{i} + y\mathbf{j}) .$$

1. Find the work done under  $\mathbf{F}$  from  $(1, 0)$  to  $(3, 0)$  along the  $x$ -axis and then along upper half circle arc  $(x - 2)^2 + y^2 = 1$ .

2. Is  $\mathbf{F}$  conservative in  $\mathbb{R}^2 \setminus \{(0, 0)\}$ ?