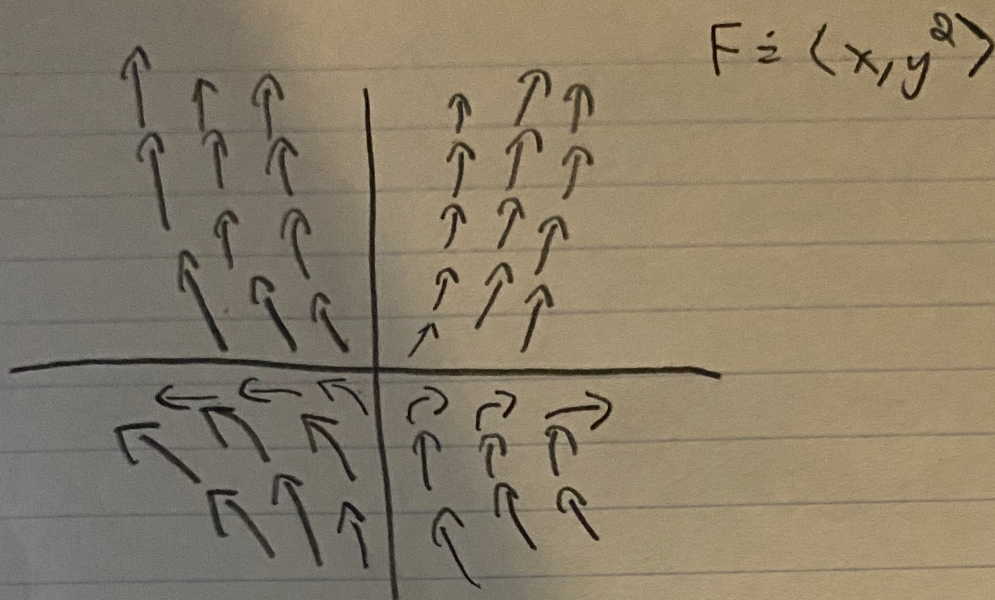


1)



a)  $F = \nabla f = \langle f_x, f_y \rangle$

$$\int \frac{d}{dx} f dx = \int f_x dx = \int y \cos(xy) dx = \sin(xy) + C_1$$

$$u = xy$$

$$du = y dx$$

$$C_1 = C_2 = 0$$

$$\int \frac{d}{dy} f dy = \int f_y dy = \int x \cos(xy) dy = \sin(xy) + C_2$$

$$f = \sin(xy)$$