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1. Show $\int_D \int 2x - y \, dA = \frac{2}{3} - \frac{\sqrt{2}}{2}$ where D is the region in the first quadrant enclosed by the circle $x^2 + y^2 = 1$ and the lines $y = x$ and $x = 0$.

2. Evaluate $\int_{-2}^2 \int_0^{\sqrt{4-x^2}} \cos(x^2 + y^2) \, dy \, dx$ by first converting the double integral to polar coordinates.