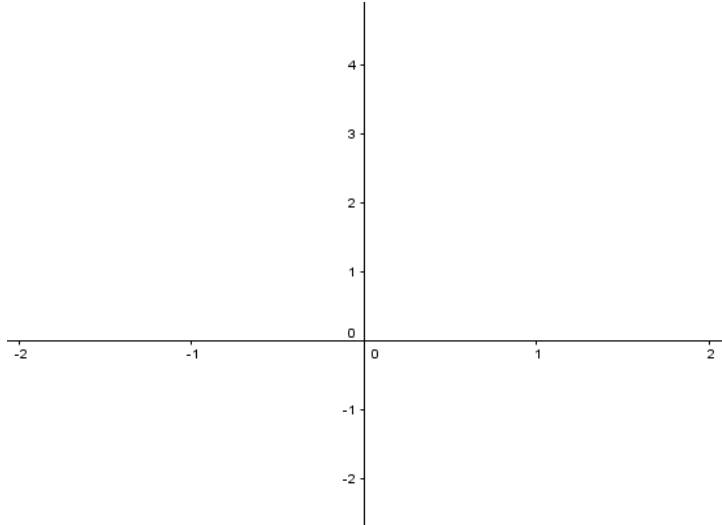


Show all your work to receive full credit.

1. Find and sketch the domain of the following function: $f(x, y) = \frac{\sqrt{y - x^2}}{1 - x}$



2. Let $v(t) = t\mathbf{i} + e^t\mathbf{j} + e^{-t}\mathbf{k}$, $r(0) = \mathbf{k}$. Find $r(t)$.

3. Set up the integral for the length of the curve defined by $r(t) = (\cos t)\mathbf{i} + (\sin t)\mathbf{j} + (\ln \cos t)\mathbf{k}$ for $0 \leq t \leq \pi/2$. Extra Credit: Find the value of the arc length.