

Name: _____

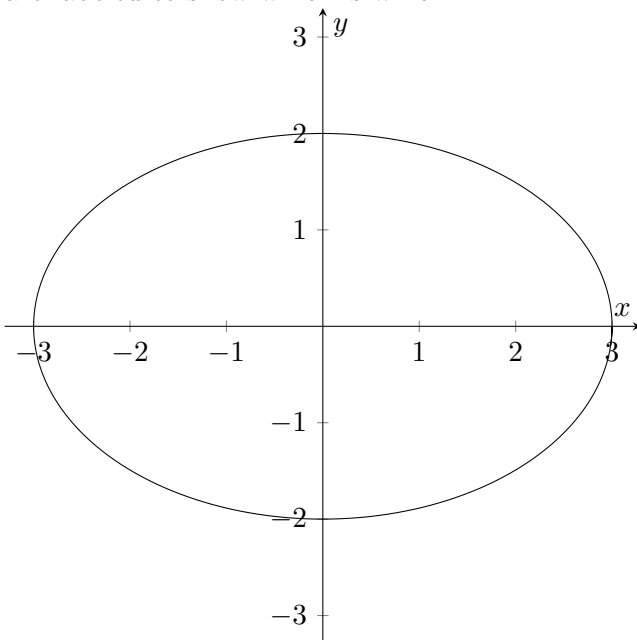
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1. Consider a particle with position function

$$\mathbf{r}(t) = 3 \cos t \mathbf{i} + 2 \sin t \mathbf{j}.$$

- (a) Compute the position, velocity, acceleration, and speed of the particle at time $t = \frac{\pi}{3}$.

- (b) The path of the particle is shown below. Draw a point at the position of the particle at $t = \frac{\pi}{3}$. Starting from that point, draw the velocity and acceleration vectors at $t = \frac{\pi}{3}$. Make sure that your vectors point in the right direction, are roughly the right size, and are labeled to show which is which.



2. Find the domain and range of the function $f(x, y) = \sqrt{9 - x^2 - y^2}$. Be specific: shape, location, size, filled in or not, etc.