Quiz 15: 10.1 (Parametric Equations)

1. The position \( P(x, y) \) of a particle moving in the xy-plane is given by the equations and parameter interval:

\[
\begin{align*}
x &= \sin t, \\
y &= \cos 2t, \\
-\frac{\pi}{2} &< t < \frac{\pi}{2}
\end{align*}
\]

Identify the path traced by the particle and describe the motion using arrows along the path.

2. Find parametric equations and a parameter interval for the motion of a particle that moves along a line segment with endpoints (0,7) and (1,4).

**Cartesian equation:**
\[
y = mx + b \quad \text{where} \quad m = \frac{\text{rise}}{\text{run}} = \frac{-3}{1}, \quad b = 7
\]

**Parametric equation:**
\[
x = t, \\
y = -3t + 7
\]

**Parametric equations:**
\[
x = t, \\
y = -3t + 7
\]

**Parameter interval:**
\[
0 < t < 1 \quad \text{or} \quad 0 \leq t \leq 1
\]