

Math 109 HW6

Fall 2018

1. Sketch the parametric curve $x = 2 \sin t + 3$ and $y = \cos t + 2$ for $t \in [0, 3\pi]$. Indicate with an arrow the direction in which the curve is traced as the parameter increases.
2. (a) Compute the slope of the parametric curve $x(t) = t \sin t$, $y(t) = \cos t$, for $t \in [0, \frac{\pi}{2}]$.
(b) Write down the tangent line equation at $t = 0$.
(c) Compute the second derivative $\frac{d^2y}{dx^2}$ of the parametric curve $x(t) = \cos t$, $y(t) = \sin t$, for $t \in [0, \frac{\pi}{2}]$. Is the curve convex or concave?