

1 3.9: Tangents of Parametrized Curves

To find the slope of the tangent line for a parametrized curve, use the fact that

$$\frac{dy}{dx} =$$

Examples:

Find an equation of the line tangent to the curve given by $x = 3 \cos t$, $y = 4 \sin t$ at the point where $t = \frac{\pi}{6}$.

The curve $x = t^3 - 4t$, $y = t^2$ crosses itself at the origin. Find equations of both tangent lines.

(On your own): Find the points on the curve $x = t^3 - 3t^2$, $y = t^3 - 3t$ where the tangent line is
a) horizontal
b) vertical

Horizontal: $(-4, 2)$, $(-2, -2)$, Vertical: $(0, 0)$, $(-4, 2)$
(If this does not make sense, try graphing the curve in Matlab)