

4. Suppose that x and y satisfy the relation given by the curve

$$x^4 + y^3 = 2 + \frac{7}{2}xy$$

(a) (5 points) Find $\frac{dy}{dx}$.

(b) (3 points) Under what condition(s) (if any) on x and y is the tangent line to the curve horizontal?

(c) (2 points) Consider the points $(1, 2)$ and $(3, 4)$. One of these points lies on the curve, and one does not. Show which point lies on the curve and which does not.

(d) (4 points) Find an equation of the tangent line to the curve at the point from part (c) that is on the curve.