

Problem statement A curve is given parametrically by these equations:

$$x(t) = \frac{1}{3}t^3 - 5t \text{ and } y(t) = t^2 - 2t .$$

- a) Sketch x and y as functions of t , giving the intercepts and critical points of each function.
- b) Sketch the curve and identify the points where the curve crosses the x -axis and the y -axis.
- c) Locate (exactly!) the points on the curve where the tangent to the curve is parallel to the x -axis, parallel to the y -axis, and parallel to the line $y = x$.