

Problem 1. Find the equation of the line through the points $(0, 3)$ and $(1, 5)$. Sketch the line.

Problem 2. Consider the line $L : y = 2x - 1$ and the point $P = (4, 2)$.

- (a) Find the equation of the line M which is perpendicular to L and passes through P .
- (b) Find the point of intersection between the lines L and M .
- (c) Find the distance from L to P .

Problem 3 (Extra Credit). The locus of the equation $x^2 + y^2 = 1$ is a circle of radius one. The line $y = x$ intersects the circle in two points. Find these points.