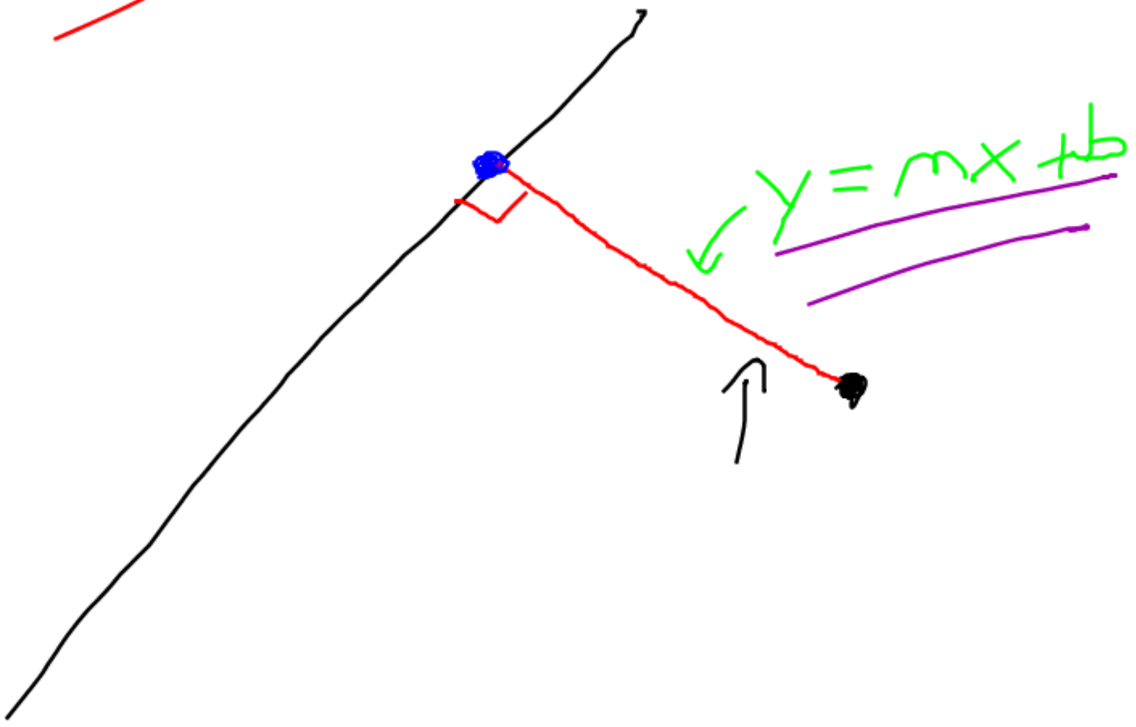
Mathematics 10D

Example of pg 87 #12

Mr. D. Hagen

Find the distance between the point A(4,4) and the line y=-3x+6

Shortest



→ Need POI

1. $m_\perp$
2. $y = m_\perp x + b$
3. POI
4. distance

Find the distance between the point A(4,4) and the line y=-3x+6

1. $m = -3 \quad \therefore \quad m_{\perp} = \frac{1}{3}$

2. $y = m_{\perp}x + b$

$4 = \frac{1}{3}(4) + b$

$\frac{12}{3} - \frac{4}{3} = b$

$\frac{8}{3} = b$

$\therefore y = \frac{1}{3}x + \frac{8}{3}$

3. $-3x + 6 = \frac{1}{3}x + \frac{8}{3}$

$-9x + 18 = x + 8$

$-10x = -10$

$x = 1$

$y = -3(1) + 6$

$y = 2 \quad \therefore$ Pt B $(1,2)$

$d_{AB} = \sqrt{(1-4)^2 + (2-4)^2}$

$= \sqrt{9+4} = \sqrt{13} = 3.6$