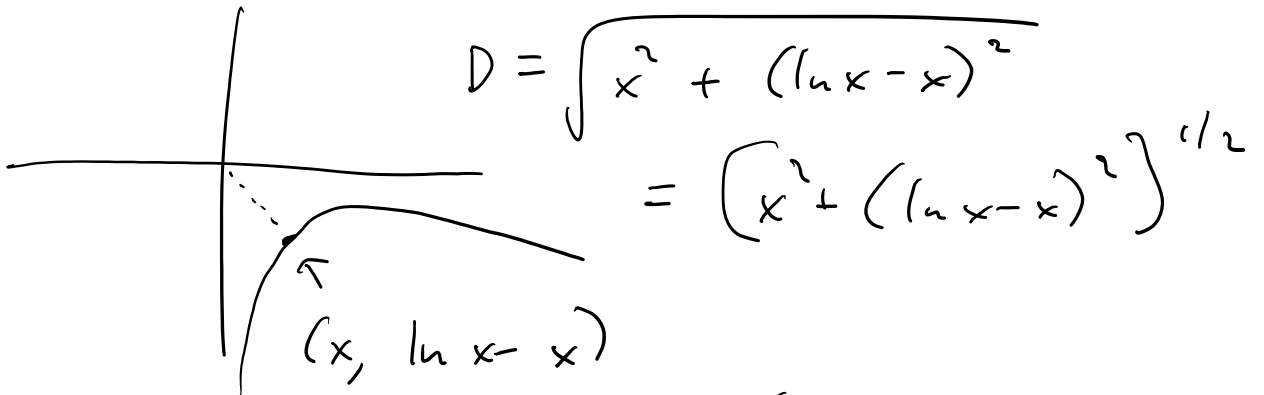


4.6

14. Find The coordinates of The point on  $y = \ln x - x$  closest to The origin. (Use distance formula.)



$$\frac{dD}{dx} = \frac{1}{2} [x^2 + (\ln x - x)^2]^{-1/2} (2x + 2(\ln x - x) \cdot (\frac{1}{x} - 1))$$

$$= \frac{x + (\ln x - x)(\frac{1}{x} - 1)}{\sqrt{x^2 + (\ln x - x)^2}} = 0 \quad x = 0.632$$

(47)

$$\lim_{x \rightarrow 0} \frac{\cos(x + \pi/2)}{\sin x} = \frac{0}{0}$$

$\xrightarrow{L'H}$

$$\frac{-\sin(x + \pi/2)}{\cos x} = \frac{-1}{1} = -1 \quad \checkmark$$