

5.6

(35 b) Verify

$$\text{LHS: } \arctan x + \arctan \frac{1}{x} = \frac{\pi}{2}, x > 0$$

$$\text{Let } y = \arctan x + \arctan \frac{1}{x}$$

$$\tan y = \tan \left(\arctan x + \arctan \frac{1}{x} \right)$$

$$\tan y = \frac{\tan(\arctan x) + \tan(\arctan \frac{1}{x})}{1 - \tan(\arctan x) \tan(\arctan \frac{1}{x})}$$

$$\tan y = \frac{x + \frac{1}{x}}{1 - x(\frac{1}{x})}$$

$$\tan y = \frac{x + \frac{1}{x}}{0} \rightarrow \text{undefined}$$

the tangent function is undefined at $y = \frac{\pi}{2} = \text{RHS} //$

* Recall that inverse trig functions are angles.