See graph in text. First we find the intersection point.

$y = \arctan x$ intersects $y = \frac{\pi}{4}$ when $x = 1$

YES {(b), (d), (e), (f)}   N0 {(a), (c)}

3. $y = \arctan x \Leftrightarrow \tan y = x$

$$\int_0^{\pi/4}(1 - \tan y)dy = \int_0^{\pi/4}(1)dy + \int_0^{\pi/4}(\tfrac{-\sin y}{\cos y})dy = y\Big|_0^{\pi/4} + \Big(\ln(\cos y)\Big)\Big|_0^{\pi/4}$$

$$= \tfrac{\pi}{4} + \ln(\cos(\tfrac{\pi}{4})) - (\ln(\cos(0)) = \tfrac{\pi}{4} + \ln(\tfrac{\sqrt{2}}{2})$$