$\left|\frac{1}{t^2}\right| < 1 \quad (|t| > 1)$

66. $\tan^{-1}x = \frac{\pi}{2} - \frac{1}{x} + \frac{1}{3x^3} - \frac{1}{5x^5} + \cdots \quad (x > 1)$

$\frac{1}{1+t^2} = \frac{1}{t^2} \cdot \frac{1}{1+\left(\frac{1}{t^2}\right)} \overset{*}{=} \frac{1}{t^2} - \frac{1}{t^4} + \frac{1}{t^6} - \cdots$

$$\tan^{-1}x = \tan^{-1}b - \int_x^b (\tan^{-1}t)' dt$$

$$= \lim_{b\to\infty} \tan^{-1}b - \int_x^{\infty} (\tan^{-1}t)' dt$$

$$= \frac{\pi}{2} - \int_x^{\infty} \left(\frac{1}{t^2} - \frac{1}{t^4} + \frac{1}{t^6} - \cdots\right) dt$$

$$= \frac{\pi}{2} + \left(\frac{1}{t} - \frac{1}{3t^3} + \frac{1}{5t^5} - \cdots\right)\Big|_x^{\infty}$$

$$= \frac{\pi}{2} - \left(\frac{1}{x} - \frac{1}{3x^3} + \frac{1}{5x^5} - \cdots\right)$$