

For inverse functions...

$$f^{-1}(f(x)) = x \text{ for } x \text{ in the domain of } f(x) \text{ and } f(f^{-1}(x)) = x \text{ for } x \text{ in the domain of } f^{-1}(x)$$

For tangent and inverse tangent functions...

$$\tan^{-1}(\tan x) = x \quad \text{given } x \text{ is in the domain of } \tan x \quad \text{Domain: } -\frac{\pi}{2} < x < \frac{\pi}{2}$$

$$\tan(\tan^{-1} x) = x \quad \text{given } x \text{ is in the domain of } \tan^{-1} x \quad \text{Domain: } -\infty < x < \infty$$

$$\tan^{-1}(\tan x) = x \quad \text{Domain: } -\frac{\pi}{2} < x < \frac{\pi}{2}$$

$$\tan(\tan^{-1} x) = x \quad \text{Domain: } -\infty < x < \infty$$

Evaluate the following:

$$\tan^{-1}\left(\tan \frac{\pi}{6}\right)$$

$$\tan^{-1}\left(\tan -\frac{\pi}{3}\right)$$

$$\tan^{-1}\left(\tan -\frac{\pi}{4}\right)$$

$$\tan^{-1}(\tan x) = x \quad \text{Domain: } -\frac{\pi}{2} < x < \frac{\pi}{2}$$

$$\tan(\tan^{-1} x) = x \quad \text{Domain: } -\infty < x < \infty$$

Evaluate the following:

$$\tan^{-1}\left(\tan \frac{2\pi}{3}\right)$$

$$\tan^{-1}(\tan x) = x \quad \text{Domain: } -\frac{\pi}{2} < x < \frac{\pi}{2}$$

$$\tan(\tan^{-1} x) = x \quad \text{Domain: } -\infty < x < \infty$$

Evaluate the following:

$$\tan^{-1}\left(\tan -\frac{11\pi}{6}\right)$$

$$\tan^{-1}(\tan x) = x \quad \text{Domain: } -\frac{\pi}{2} < x < \frac{\pi}{2}$$

$$\tan(\tan^{-1} x) = x \quad \text{Domain: } -\infty < x < \infty$$

Evaluate the following:

$$\tan(\tan^{-1} \frac{1}{2})$$

$$\tan(\tan^{-1} 55)$$

$$\tan(\tan^{-1} -82)$$

For tangent and inverse tangent functions...

$$\tan^{-1}(\tan x) = x \quad \text{given } x \text{ is in the domain of } \tan x \quad \text{Domain: } -\frac{\pi}{2} < x < \frac{\pi}{2}$$

$$\tan(\tan^{-1} x) = x \quad \text{given } x \text{ is in the domain of } \tan^{-1} x \quad \text{Domain: } -\infty < x < \infty$$