$$F[\text{x\_}] = \text{FullSimplify}\left[\int_0^x \frac{\xi}{\xi^5+1}\, d\xi,\ \{x > 0\}\right]$$

$$\frac{1}{100}\left(2\sqrt{5\left(5+2\sqrt{5}\right)}\ \pi - 5\left(2\sqrt{2\left(5+\sqrt{5}\right)}\ \tan^{-1}\left(\frac{-4x+\sqrt{5}+1}{\sqrt{10-2\sqrt{5}}}\right) + 2\sqrt{10-2\sqrt{5}}\ \tan^{-1}\left(\frac{4x+\sqrt{5}-1}{\sqrt{2\left(5+\sqrt{5}\right)}}\right) + 4\log(x+1) + \sqrt{5}\ \log\left(2x^2-\left(1+\sqrt{5}\right)x+2\right) - \sqrt{5}\ \log\left(x\left(2x+\sqrt{5}-1\right)+2\right) - \log\left((x-1)\,x\left(x^2+1\right)+1\right)\right)\right)$$

$$F\left[10.^{-8}\right]$$

$$-7.105427357601002 \times 10^{-17}$$

$$\text{NIntegrate}\left[\frac{\xi}{\xi^5+1}, \{\xi, 0, 10^{-8}\}\right]$$

$$5.000000000000001 \times 10^{-17}$$

$$F[t\_] = \int_0^t \frac{\sin(\theta)}{\sqrt{1-\theta^2}}\, d\theta$$

$$\int_0^t \frac{\sin(\theta)}{\sqrt{1-\theta^2}}\, d\theta$$

```
F[1]
```

$$\frac{1}{2}\pi H_0(1)$$

```
F[1] // N
```

0.8932437409750262

$$\text{NIntegrate}\left[\frac{\sin(\theta)}{\sqrt{1-\theta^2}}, \{\theta, 0, 1\}\right]$$

0.8932437409750326