Problem 25

In each of Problems 25 through 28, determine whether the given integral converges or diverges.

\[
\int_0^\infty (t^2 + 1)^{-1} dt
\]

Solution

\[
\int_0^\infty (t^2 + 1)^{-1} dt = \tan^{-1} t \bigg|_0^\infty \\
= \tan^{-1} \infty - \tan^{-1} 0 \\
= \frac{\pi}{2} - 0 \\
= \frac{\pi}{2}
\]

The integral converges.