

Name: _____

Solve the following problems.

1. Compute $\int_{-\infty}^0 \frac{x}{1+x^2} dx$ and $\int_0^{\infty} \frac{x}{1+x^2} dx$. What does this say about $\int_{-\infty}^{\infty} \frac{x dx}{1+x^2}$?

2. Show that $\int_1^{\infty} \frac{dx}{x^2-4}$ is not a finite number. What answer do you get if you forget that the integrand has an asymptote at 2 and fail to split the integral up there?

3. Compute $\int_1^2 \frac{dt}{t\sqrt{t^2-1}}$.

4. Compute $\int_{10}^{\infty} \frac{dx}{x^2-9}$.

5. Find $\int_0^{\infty} \frac{1}{e^t-1} dt$.

6. Compute $\int_1^3 \frac{dt}{\sqrt{9-t^2}}$.