Solve the following problems.

1. Compute \( \int \frac{1}{x^2-4} \, dx \).

2. Compute \( \int \frac{1}{x^2+6x+10} \, dx \).

3. Compute \( \int \frac{x^3}{x^2+2} \, dx \).

4. Compute \( \int \frac{x}{x^2-1} \, dx \).
5. Compute $\int \frac{dt}{2 + e^{2t}}$.

6. Find a recursive formula for $\int \tan^n(x) \, dx$. Use it to compute $\int \tan^4(x) \, dx$. Hint: to find the recursive formula you do not need integration by parts but you will need a trigonometric identity.