1. Problem 4., page 257 of text.

2. Problem 8, page 257 of text.

\[
\int_0^{\infty} \frac{dx}{(1 + x^4)^2}.
\]
(Hint: Use the contour shown.)

4. Problem 3, page 265 of text.

5. Evaluate, using residue theory with an indented contour,
\[
\int_0^{\infty} \frac{\sin ax - a \sin x}{x(x^2 + 1)} dx.
\]
Here \( a \) is a positive constant.

6. * Evaluate, using residue theory
\[
\int_0^{\infty} \frac{\sin^2 x}{x^2} dx.
\]
(Hint: \( \sin^2 x = ? \))