

**MAT334, COMPLEX VARIABLES, SUMMER 2020. PROBLEMS FOR JULY 13 – 17**

**Due Wednesday, July 22, at 3:30 PM EDT.**

1. Evaluate the following integrals:

$$\int_{-\infty}^{+\infty} \frac{1}{1+x^4} dx, \quad \int_{-\infty}^{+\infty} \frac{1}{1-x^2+x^4} dx.$$

(You may cite the term test solutions on the course website in your solution, if you wish.)

2. Evaluate the following integrals:

$$\int_{-\infty}^{+\infty} \frac{e^{ikx}}{1+x^4} dx, \quad k \text{ any real number. [Hint: Apply your work from problem 1.]}$$
$$\int_{-\infty}^{+\infty} \frac{\sin mx}{x(x^2+a^2)} dx, \quad m, a \text{ real, } a \neq 0.$$