

“Study hard what interests you the most in the most undisciplined, irreverent and original manner possible.”

RICHARD FEYNMAN

In class work **12** has questions **1** through **3** with a total of **4** points. Turn in your work at the end of class *on paper*. This assignment is due *Thursday 5 October 13:20*.

- 2 1. Find the *numeric value* of the integral $\int_0^\infty \frac{x}{1+x^4} dx$. **Hint:** To find an antiderivative of $\int \frac{x}{1+x^4} dx$, use the substitution $z = x^2$.

- 1 2. Show that $\int_0^\infty \frac{28+\cos(x)}{1+x^2} dx$ converges. To do this, use a comparison test with $\frac{\alpha}{1+x^2}$, where α is a number that you cleverly choose.

- 1 3. Show that $\int_1^\infty \frac{107+e^{-x}}{1+x^2} dx$ converges. To do this, use a limit comparison test.