Tune-Up Tuesday #9 Inverse Continuous-Time Fourier Transforms (Nov. 30, 2021)

**Warm-up problem**. Compute the inverse continuous-time Fourier transform of

**Solution:** This is the first entry in the table of Fourier transform pairs on page 338:

Hence, the inverse continuous-time Fourier transform for

is

**Homework Problem 9.1(a)-(c)** which *Signal Processing First* P-11.8(a)-(c) on page 343:

“In the following, the Fourier transform is given. Using the tables of Fourier transforms [page 338] and Fourier transform properties [page 339] to determine the inverse Fourier transform for each case. You may give your answer either as an equation or a carefully labeled plot, whichever is most convenient.”

**Solution:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Part |  | Rewrite  | Notes |  |
| (a) |  |  | Delay by 3s the result of  |  |
| (b) |  |  | Differentiate with respect to the result of  |  |
| (c) |  |  | Differentiate with respect to the result of and then delay by 3s  | We can delay theabove result by 3s: |