COLLEGE OF ENGINEERING & TECHNOLOGY
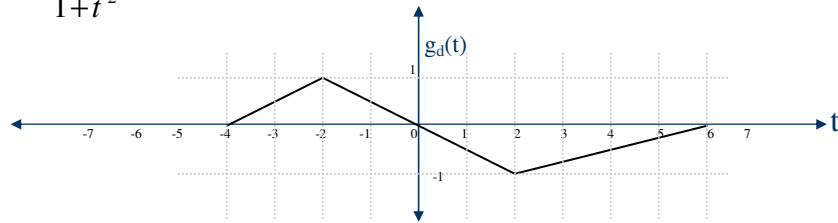
Department : **Electronics & Communications Engineering**
Lecturer : **Dr. Mohamed Essam Khedr**
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Course : **Spectral Analysis**
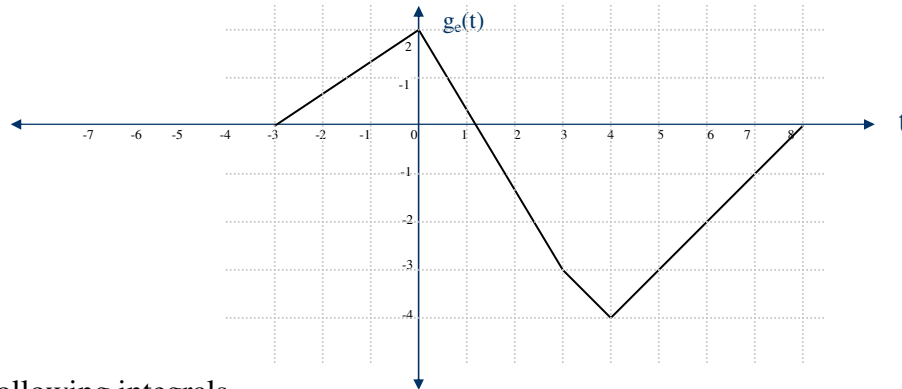**Course Code** : **EC321**

Sheet 5

1. Find the Fourier Transform of the following signals.

   a. $g(t) = \dfrac{1}{1+t^2}$

   b. $g(t) = t\,\dfrac{1}{1+t^2}$

   c. $g(t) = t^2\,\dfrac{1}{1+t^2}$

   d.

   e.

2. Evaluate the following integrals.

   a. $\displaystyle\int_{-\infty}^{\infty} \dfrac{1}{1+jf}\,df$

   b. $\displaystyle\int_{-\infty}^{\infty} e^{-a|t|}\,dt$

   c. $\displaystyle\int_{-\infty}^{\infty} e^{-\pi t^2}\,dt$

   d. $\displaystyle\int_{-\infty}^{\infty} \operatorname{sinc}(f\,t)\,df$

   e. $\displaystyle\int_{-\infty}^{\infty} \dfrac{2a}{a^2 + (2\pi f)^2}\,df$

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