

Problem S5.1

Find the Laplace transform of $f(t) = e^{-2t} \cos(3t)$

Solution

Let $g(t)$ be defined as $g(t) = \cos(3t)$ then $G(s) = \frac{s}{s^2 + 9}$

Applying the property $L\{f(t)e^{-\alpha t}\} = F(s + \alpha)$, we have

$$F(s) = \frac{(s + 2)}{(s + 2)^2 + 9}$$