

Problem 3

In each of Problems 1 through 10, find the inverse Laplace transform of the given function.

$$F(s) = \frac{2}{s^2 + 3s - 4}$$

Solution

Factor the denominator.

$$\begin{aligned} F(s) &= \frac{2}{s^2 + 3s - 4} \\ &= \frac{2}{(s + 4)(s - 1)} \\ &= \frac{2/5}{s - 1} - \frac{2/5}{s + 4} \end{aligned}$$

Take the inverse Laplace transform now to get $f(t)$.

$$f(t) = \frac{2}{5}e^t - \frac{2}{5}e^{-4t}$$