

Solution (#1712) We find

$$\bar{f}(s) = \frac{s^3 + 4s^2 + 1}{s^2(s^2 + 4s + 8)} = \frac{1}{16} \left\{ \frac{2}{s} - \frac{1}{s^2} + \frac{17(s+2) + 32}{(s+2)^2 + 4} \right\}.$$

Inverting we find

$$f(x) = \frac{1}{16} \{2x - 1 + 17e^{-2x} \cos 2x - 16e^{-2x} \sin 2x\}.$$