2. [14 points] Fill in the missing portions of each of the following transforms. Briefly explain how you obtain your work.

a. [7 points] $\mathcal{L}\{\begin{cases} 0, & 0 \le t < 1 \\ 1, & 1 \le t < 5 \\ e^{-(t-5)}, & t \ge 5 \end{cases} = \frac{1}{s}(e^{-s} - e^{-5s}) + $ _____

b. [7 points] $\mathcal{L}^{-1}\{\dfrac{1}{s(s+1)(s^2+1)}\} = 1 - \dfrac{1}{2}\cos(t) + $ _____