L **7.120** For each function X given below, find the inverse Laplace transform x of X.

(a) $X(s) = \dfrac{e^{-3s}}{s(s+1)}$ for $\mathrm{Re}(s) > 0$;

(b) $X(s) = 7(e^{-2s} - e^{-3s})$ for all $s \in \mathbb{C}$; and

(c) $X(s) = \dfrac{1 - e^{-5s}}{(s+1)(s+2)}$ for $\mathrm{Re}(s) > -1$.

Short Answer. (a) $x(t) = [1 - e^{-t+3}]u(t-3)$; (b) $x(t) = 7[\delta(t-2) - \delta(t-3)]$; (c) $x(t) = [e^{-t} - e^{-2t}]u(t) - [e^{5-t} - e^{2(5-t)}]u(t-5)$