Ex: Find $v(t)$ if $V(s) = \dfrac{18s+148}{s^2+12s+11}$.

Sol'n: We have two real roots:

$$\mathcal{L}^{-1}\left\{\frac{18s+148}{s^2+12s+11}\right\} = \mathcal{L}^{-1}\left\{\frac{18s+148}{(s+1)(s+11)}\right\} = \mathcal{L}^{-1}\left\{\frac{A}{s+1}+\frac{B}{s+11}\right\}$$

We fine A and B by the usual method of removing the pole and evaluating at the pole value:

$$A = (s+1)V(s)\big|_{s=-1} = \left.\frac{18s+148}{s+11}\right|_{s=-1} = \frac{130}{10} = 13$$

$$B = (s+11)V(s)\big|_{s=-11} = \left.\frac{18s+148}{s+1}\right|_{s=-11} = \frac{-50}{-10} = 5$$

Before proceeding, we check our result:

$$\frac{13}{s+1}+\frac{5}{s+11} = \frac{13(s+11)+5(s+1)}{s^2+12s+11} = \frac{18s+143+5}{s^2+12s+11} \quad \surd$$

The inverse transform follows immediately:

$$\mathcal{L}^{-1}\left\{\frac{13}{s+1}+\frac{5}{s+11}\right\} = \left[13e^{-t}+5e^{-11t}\right]u(t)$$