The particular solution is obtained via the method of variation of parameters.

$$U_p = V_1(x)U_1 + V_2(x)U_2$$

$$U_p' = \boxed{V_1'U_1 + V_2'U_2} + V_1U_1' + V_2U_2'$$

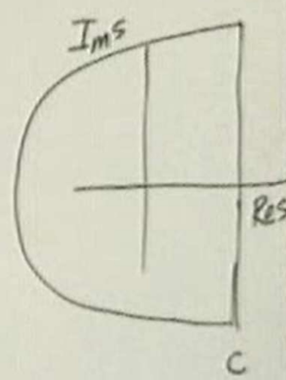
$$U_p'' = V_1'U_1' + V_1U_1'' + V_2'U_2' + V_2U_2''$$

$$V_1'U_1 + V_2'U_2 = 0$$

$$V_1'U_1' + V_2'U_2' = -G(x;s)$$

$$\mathcal{L}\{u(x,t)\} = \int_0^\infty e^{-st}u(x,t)\,dt = U(x;s)$$

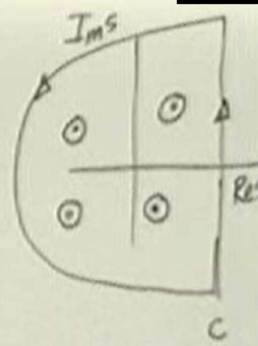
$$\mathcal{L}^{-1}\{U(x;s)\} = \frac{1}{2\pi i}\int_{c-i\infty}^{c+i\infty} e^{st}U(x;s)\,ds$$



$$f(a) = \frac{1}{2\pi i}\oint \frac{f(s)}{s-a}\,ds$$

$$\mathcal{L}\{u(x,t)\} = \int_0 e \; u(x,t)\,dt = U(x;s)$$

$$u(x,t) = \mathcal{L}^{-1}\{U(x;s)\} = \frac{1}{2\pi i}\int_{c-i\infty}^{c+i\infty} e^{st}\,U(x;s)\,ds$$



$$u(x,t) = e^{at}Q(x;a) = \frac{1}{2\pi i}\int_{c-i\infty}^{c+i\infty} \frac{e^{st}\,Q(x;s)\,ds}{s-a}$$

$$\lim_{s\to a} e^{st}(s-a)U(x;s)$$