a)

$$sY(s) - y(0) - Y(s) = \frac{1}{s-a} \qquad a=1$$

$$(s-1)Y(s) - 1 = \frac{1}{s-1} + 1$$

$$Y(s) = \frac{1}{(s-1)^2} + \frac{1}{s-1}$$

$$y(t) = te^{t} + e^{t} = (t+1)e^{t}$$

b)

$$sY(s) - 5 + 3Y(s) = -\frac{5}{s^2+1} \qquad a=1$$

$$sY(s) + 3Y(s) = -\frac{5}{s^2+1} + 5$$

$$(s+3)Y(s) = \dots$$

$$Y(s) = -\frac{5}{(s^2+1)\cdot(s+3)} + \frac{5}{s+3}$$

$$= -\frac{5}{s^3+3s^2+s+3} + \frac{5}{s+3}$$

$$Y(t) = \frac{-3}{10}\cdot\left(-e^{-3t} + \cos(t) + \frac{1}{3}\sin(t)\right) + \dots \qquad \begin{matrix} \phi = 5 \\ a = 3 \\ b = 1 \end{matrix}$$

$$y(t) = -\frac{3}{10}\left(-e^{-3t} + \cos(t) + \frac{1}{3}\sin(t)\right) + 5e^{-3t}$$