$$= \mathcal{L}^{-1}\left\{\frac{2s+1}{s^2-4s+13}\right\}$$

$$s^2-4s+13 \to s^2-4s+(2)^2-(2)^2+13$$

$$(s-2)^2-9$$

$$= \mathcal{L}^{-1}\left\{\frac{2s+1}{(s-2)^2-9}\right\}$$

$$= \mathcal{L}^{-1}\left\{\frac{2s}{(s-2)^2-9}\right\} + \mathcal{L}^{-1}\left\{\frac{1}{(s-2)^2-9}\right\}$$

$$= e^{-2t}\mathcal{L}^{-1}\left\{\frac{2(s-2)}{s^2-9}\right\} + \frac{1}{3}\mathcal{L}^{-1}\left\{\frac{3}{(s-2)^2-9}\right\}$$

$$= e^{-2t}\mathcal{L}^{-1}\left\{\frac{2s-4}{s^2-9}\right\} + \frac{1}{3}e^{-2t}\,\text{sen}(3t)$$

$$= e^{-2t}\left[2\mathcal{L}^{-1}\left\{\frac{s}{s^2-9}\right\} - 4\mathcal{L}^{-1}\left\{\frac{1}{s^2-9}\right\}\right] + \frac{1}{3}e^{-2t}\,\text{sen}(3t)$$

$$= e^{-2t}\left[2\cos(3t) - \frac{4}{3}\text{sen}(3t)\right] + \frac{1}{3}e^{-2t}\,\text{sen}(3t)$$