(5) $$F(s) = \frac{4}{s(s^2+2s+2)} = \frac{A}{s} + \frac{Bs+D}{s^2+2s+2}$$

$$A = s\cdot\frac{4}{s(s^2+2s+2)}\Big|_{s=0} = 2$$

$$\frac{4}{s(s^2+2s+2)} = \frac{2(s^2+2s+2) + Bs^2+Ds}{s(s^2+2s+2)}$$

$$s^2 \Rightarrow 0 = 2+B \quad \Rightarrow B=-2$$

$$s \Rightarrow 0 = 4+D \quad \Rightarrow D=-4$$

$$F(s) = \frac{2}{s} - \frac{2s+4}{(s+1)^2+1} = \frac{2}{s} - \frac{2(s+1)}{(s+1)^2+1} - 2\frac{1}{(s+1)^2+1}$$

$$f(t) = \left(2 - 2e^{-t}\cos(t) - 2e^{-t}\sin(t)\right)u(t)$$