

$$F_3(s) = \frac{s+3}{(s+1)(s^2+4s+8)}$$

$$= \frac{r_1}{(s+1)} + \frac{r_1(s+2)}{(s+2)^2 + \cancel{4} 2^2} \quad \begin{matrix} \swarrow \\ \text{note} \\ \text{error} \end{matrix}$$

$$+ \frac{r_3 s}{(s+2)^2 + (\cancel{4})^2}$$

$$r_1 = \frac{(s+3)(\cancel{s+1})}{(\cancel{s+1})(s^2+4s+8)} \Big|_{s=-1}$$

$$= \frac{2}{s}$$

$$\frac{s+3}{(s+1)(s^2+4s+8)} = \frac{2/s}{(s+1)} + \frac{r_2(s+2)}{s^2+4s+8} +$$

$$\frac{r_3(s)}{s^2+4s+8}$$