2.3. 1. $\varphi_1 = t^2$. $\varphi_2 = t^2 + e^{2t}$. $\varphi_3 = 1 + t^2 + 2e^{2t}$.

Consider $\varphi_1 - \varphi_2$ and $\varphi_1 - \varphi_3$, $\varphi_2 - \varphi_3$.

$\varphi_1 - \varphi_2 = -e^{2t}$, $\varphi_1 - \varphi_3 = -1 - 2e^{2t}$, $\varphi_2 - \varphi_3 = 1$.

The components of the differences of the particular s/ns are e^{2t}, 1.

So the general s/n $y(t) = c_1 e^{2t} + c_2 + \varphi_1$ ← Here you can also choose φ_2 or φ_3.

$= c_1 e^{2t} + c_2 + t^2$.

2. $\varphi_1 = 1 + e^{t^2}$. $\varphi_2 = 1 + te^{t^2}$. $\varphi_3 = (t+1)e^{t^2} + 1$.

$\varphi_1 - \varphi_2 = e^{t^2} - te^{t^2}$. $\varphi_2 - \varphi_3 = -e^{t^2}$. $\varphi_1 - \varphi_3 = -te^{t^2}$.

So $y(t) = c_1 e^{t^2} + c_2 te^{t^2} + \varphi_1$ ← again, you can pick any φ_i.

$= c_1 e^{t^2} + c_2 te^{t^2} + 1 + e^{t^2}$

$= c_1' e^{t^2} + c_2 te^{t^2} + 1$.