Quiz 10: Find the general solution to the inhomogenous differential equation

$$\frac{d}{dt}\mathbf{x} = \begin{pmatrix} 1 & 2 \\ 0 & 3 \end{pmatrix} \mathbf{x} + \begin{pmatrix} e^t/t + te^{3t} \\ te^{3t} \end{pmatrix}$$

Hint: a fundamental matrix for the homogenous equation is given by

$$X(t) = \begin{pmatrix} e^t & e^{3t} \\ 0 & e^{3t} \end{pmatrix}$$