

Name:

Find the state transition matrices of these two matrices separately:

$$A_1(t) = 2 \sin(t) \frac{d \sin(t)}{dt} \begin{bmatrix} 0 & 0 \\ 1 & 0 \end{bmatrix}$$

$$A_2(t) = \begin{bmatrix} \dot{a}(t) & \dot{b}(t) \\ \dot{b}(t) & \dot{a}(t) \end{bmatrix}.$$

Hint: For $A_1(t)$, you might find this integration hint useful

$$\int_{t_0}^t u(t) du(t) = 0.5(u^2(t) - u^2(t_0)).$$

