Suggested problems 5

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1. Find the general solution of the given first order linear ODEs using the integrating factor method

$$t \cdot y' + 2y = \sin t.$$

2. Solve the initial value problem.

$$(\sin t)y' + (\cos t)y = e^t, \qquad y(\frac{\pi}{2}) = a, \qquad 0 < t < \pi.$$

Describe the behavior of the solution depending on a when t goes to 0 from the right, i.e., compute the limit of the solution when $t \to 0^+$.