QUESTION
Find the Laplace transform of the function te^{-2t}.

ANSWER
$\mathcal{L}\{t\} = \dfrac{1}{s^2}$, therefore $\mathcal{L}\{te^{-2t}\} = \dfrac{1}{s^2}\Big|_{s \to s-(-2)} = \dfrac{1}{(s+2)^2}$