13. IF $v = \ln(t)$ THEN $t = e^v$ AND $t^2 = e^{2v}$.

FURTHERMORE, BY THE CHAIN RULE,

$$\frac{dy}{dt} = \frac{dy}{dv} \cdot \frac{dv}{dt} = \frac{dy}{dv} \cdot \frac{1}{t} = e^{-v}\frac{dy}{dv}$$

$$\frac{d^2y}{dt^2} = \frac{d}{dt}\left[\frac{dy}{dt}\right] = \frac{d}{dt}\left[e^{-v}\frac{dy}{dv}\right]$$

$$= \frac{d}{dv}\left[e^{-v}\frac{dy}{dv}\right] \cdot \frac{dv}{dt}$$

$$= \left[-e^{-v}\frac{dy}{dv} + e^{-v}\frac{d^2y}{dv^2}\right] \cdot e^{-v}$$

$$= e^{-2v}\frac{d^2y}{dv^2} - e^{-2v}\frac{dy}{dv}$$

$\therefore$ THE EULER EQUATION BECOMES

$$e^{2v}\left[e^{-2v}\frac{d^2y}{dv^2} - e^{-2v}\frac{dy}{dv}\right] + Ae^{v}\left[e^{-v}\frac{dy}{dv}\right] + By = 0$$

$$\frac{d^2y}{dv^2} - \frac{dy}{dv} + A\frac{dy}{dv} + By = 0$$

$$\frac{d^2y}{dv^2} + (A-1)\frac{dy}{dv} + By = 0$$

WHICH IS AN EQUATION WITH THE CONSTANT COEFFICIENTS

$1, A-1, B$