painting value t years from now $V(t) = 4^{\sqrt{t}}$ / annual interest rate $r = 0,12$

$\Rightarrow$ present value max $t = 33,65$ years

present value $V_0(t) = e^{-0,12t} V(t) = e^{-0,12t} 4^{\sqrt{t}}$

$$\frac{d}{dt} V_0(t) = -0,12 \, e^{-0,12t} \, 4^{\sqrt{t}} + e^{-0,12t} \, 4^{\sqrt{t}} \frac{\ln 4}{2\sqrt{t}} = e^{-0,12t} \, 4^{\sqrt{t}} \left(\frac{\ln 4}{2\sqrt{t}} - 0,12 \right) = 0 \text{ max}$$

$$2\sqrt{t} = \frac{\ln 4}{0,12} \Rightarrow t = \left(\frac{\ln 4}{0,24} \right)^2 = 33,65 \text{ years}$$