

**P1**

a)  $\frac{T_T^2}{d_T^3} = \frac{T_J^2}{d_J^3}$  [0,6]

$$T_J^2 = \frac{d_J^3}{d_T^3} T_T^2 \Rightarrow T_J = \sqrt{5,203^3 \cdot 1^2} = 11,87 \text{ anys} \quad [0,4]$$

b)  $\frac{1}{2} m v_{esc}^2 - G \frac{M_J m}{R_J} = 0$  [0,5]

$$v_{esc} = \sqrt{2G \frac{M_J}{R_J}} \quad [0,1]$$

A més:  $g = G \frac{M_T}{R_T^2} \Rightarrow G \frac{M_T}{R_T} = g R_T$  [0,2]

$$v_{esc} = \sqrt{2G \frac{M_J}{R_J}} = \sqrt{2G \frac{317,8 M_T}{10,52 R_T}} = \sqrt{2 \cdot \frac{317,8}{10,52} \cdot g R_T} = 6,14 \cdot 10^4 \frac{\text{m}}{\text{s}} \quad [0,2]$$

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