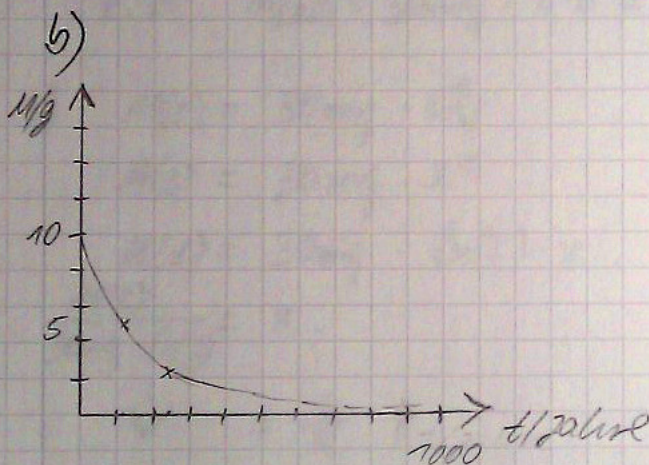


Aufgabe 2

$$m_{\text{rad}} = 10\text{g}$$

Halbwertszeit beträgt = 120 Jahre

$$a) M(t) = 10\text{g} \cdot \left(\frac{1}{2}\right)^{\frac{t}{120}}$$



$$M(120) = 10\text{g} \cdot \left(\frac{1}{2}\right)^{\frac{120}{120}} = 5\text{g}$$

$$M(240) = 10\text{g} \cdot \left(\frac{1}{2}\right)^{\frac{240}{120}} = 2,5\text{g}$$

c) msad vor 120 Jahren:

$$M(120) = 10\text{g} \cdot \left(\frac{1}{2}\right)^{\frac{120}{120}} = 5\text{g}$$
$$M(120) = 10\text{g} \cdot \left(\frac{1}{2}\right)^{\frac{120}{120}} = 20\text{g}$$
$$M(240) = 10\text{g} \cdot \left(\frac{1}{2}\right)^{\frac{240}{120}} = 40\text{g}$$
$$M(60) = 10\text{g} \cdot \left(\frac{1}{2}\right)^{\frac{60}{120}} = 14,14\text{g}$$

d)

$$1000\text{g} = 10\text{g} \cdot \left(\frac{1}{2}\right)^{\frac{t}{120}} \quad | : 10\text{g}$$
$$100 = \left(\frac{1}{2}\right)^{\frac{t}{120}}$$

$$\ln(100) = \ln\left(\frac{1}{2}\right) \cdot \left(-\frac{t}{120}\right)$$

$$4,605 = -0,6931 \cdot \left(-\frac{t}{120}\right) \quad | \cdot -1,443$$

$$-6,644 = -\frac{t}{120}$$

$$\underline{t = 797,263 \text{ Jahre}}$$