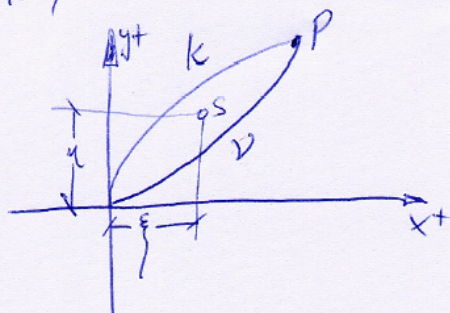


131)

FÜR MEINE LIEBE SC!

 $P(7|224)$

$$K: y^2 = bx, P \in K \Rightarrow 224^2 = 7 \cdot b \Rightarrow b = 7168$$

$$\Rightarrow K: y^2 = 7168x \Rightarrow y = 32\sqrt{7} \cdot x^{1/2}$$

$$v: y^2 = ax^3, P \in v \Rightarrow \frac{224^2}{7^2 \cdot 32^2} = a \cdot 7^3 \Rightarrow a = \frac{32^2}{7} = \frac{1024}{7}$$

$$\Rightarrow v: y^2 = \frac{1024}{7} \cdot x^3 \Rightarrow y = \frac{32\sqrt{7}}{7} \cdot x^{3/2}$$

$$\Rightarrow \int_0^7 x \left(32\sqrt{7} x^{1/2} - \frac{32\sqrt{7}}{7} x^{3/2} \right) dx = \frac{32\sqrt{7}}{7} \int_0^7 (7x^{3/2} - x^{5/2}) dx$$

$$= \frac{\int_0^7 (32\sqrt{7} x^{1/2} - \frac{32\sqrt{7}}{7} x^{3/2}) dx}{\int_0^7 (32\sqrt{7} x^{1/2} - \frac{32\sqrt{7}}{7} x^{3/2}) dx} = \frac{32\sqrt{7}}{7} \int_0^7 (7x^{1/2} - x^{3/2}) dx$$

$$= \frac{\left(7 \cdot \frac{2}{5} x^{5/2} - \frac{2}{7} x^{7/2} \right) \Big|_0^7}{\left(7 \cdot \frac{2}{3} x^{3/2} - \frac{2}{5} x^{5/2} \right) \Big|_0^7} = \frac{\left(\frac{14}{5} x^2 \sqrt{x} - \frac{2}{7} x^3 \sqrt{x} \right) \Big|_0^7}{\left(\frac{14}{3} x \sqrt{x} - \frac{2}{5} x^2 \sqrt{x} \right) \Big|_0^7} =$$

$$= \frac{\frac{2}{35} x^2 \sqrt{x} (49 - 5x) \Big|_0^7}{\frac{2}{15} x \sqrt{x} (35 - 3x) \Big|_0^7} = \frac{\frac{2}{35} \cdot 49 \cdot 7 \cdot 7}{\frac{2}{15} \cdot 7 \cdot 7 \cdot 7} = \frac{7}{35} : \frac{1}{15} = \frac{7}{35} \cdot \frac{15}{7} = \frac{15}{35} = \boxed{3}$$

$$N = \frac{32\sqrt{7}}{7} \cdot \frac{2}{15} \cdot 7 \cdot 7 \cdot 7 = \frac{32 \cdot 7 \cdot 2 \cdot 7}{15} = \frac{6272}{15}$$

$$y = \frac{1}{2} \cdot \frac{\int_0^7 (7168x - \frac{1024}{7} x^3) dx}{N} = \frac{1}{2N} \cdot \left(3584x^2 - \frac{256}{7} x^4 \right) \Big|_0^7 =$$

$$= \frac{1}{\frac{12544}{15}} \cdot \frac{256}{7} \cdot x^2 (49 - x^2) \Big|_0^7 = \frac{15}{12544} \cdot \frac{256}{7} \cdot 49 \cdot 49 = \boxed{105}$$

$$\Rightarrow \boxed{S(3|105)}$$

Nicht nur ablegen, sondern
durcharbeiten! LG

2008/11/12

Euer mathprof. o. /
& KAVAU