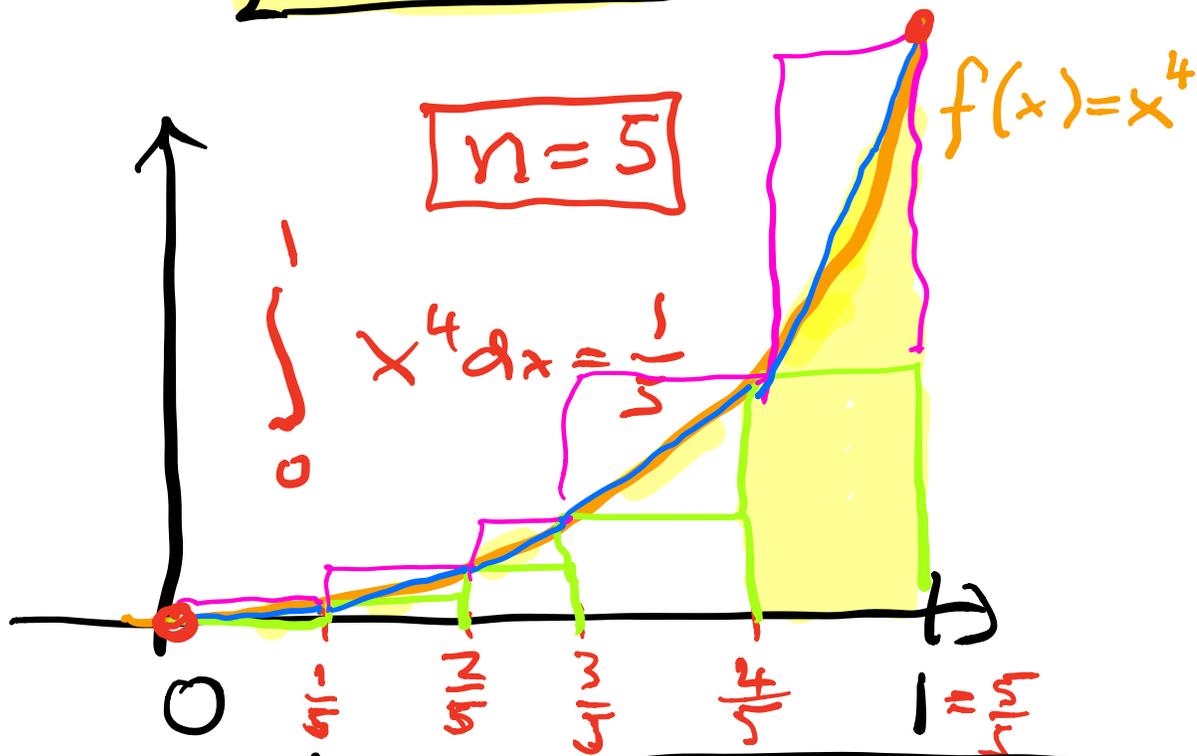


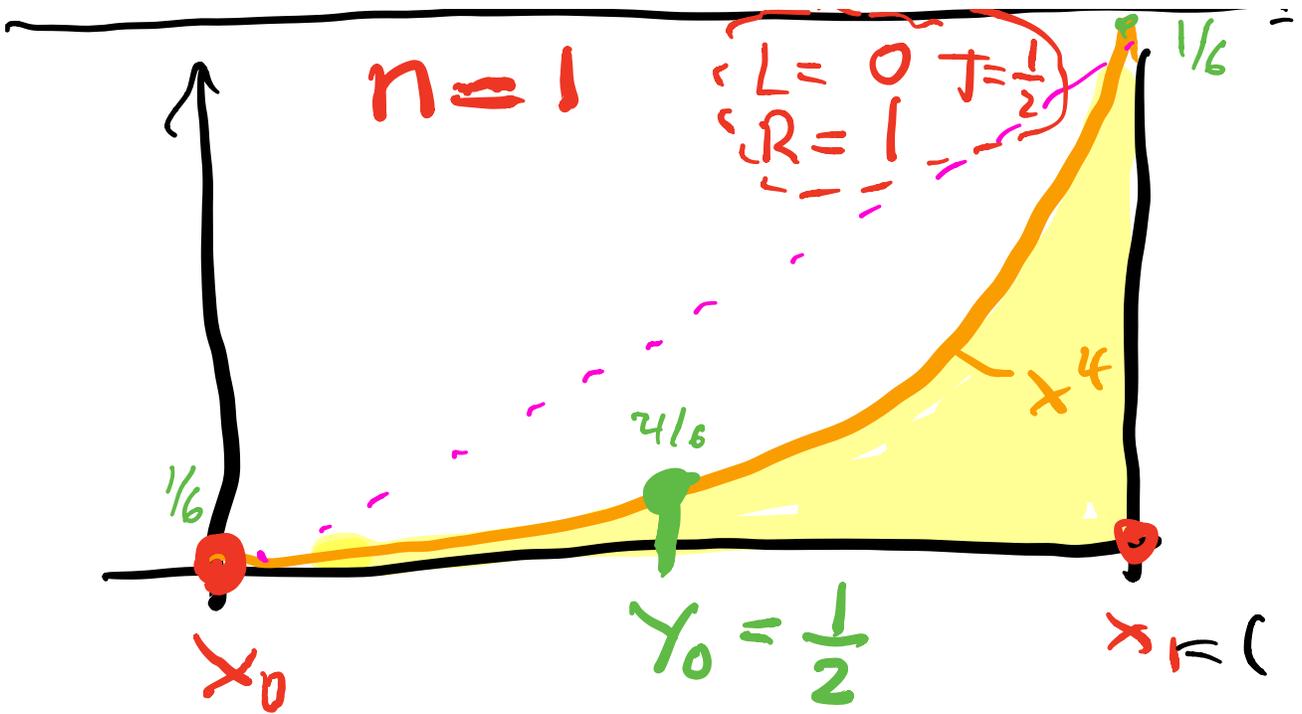
# Unit 27



$$\begin{aligned} L &= \sum_{k=0}^{4} f\left(\frac{k}{5}\right) \frac{1}{5} \\ &= \left[ 0^4 + \left(\frac{1}{5}\right)^4 + \left(\frac{2}{5}\right)^4 + \left(\frac{3}{5}\right)^4 + \left(\frac{4}{5}\right)^4 \right] \cdot \frac{1}{5} \\ &= \frac{354}{3125} = 0.1133 \end{aligned}$$

$$\begin{aligned} R &= \sum_{k=1}^{5} f\left(\frac{k}{5}\right) \frac{1}{5} = \left[ \left(\frac{1}{5}\right)^4 + \dots + \left(\frac{5}{5}\right)^4 \right] \frac{1}{5} \\ &= \frac{979}{3125} = 0.31328 \end{aligned}$$

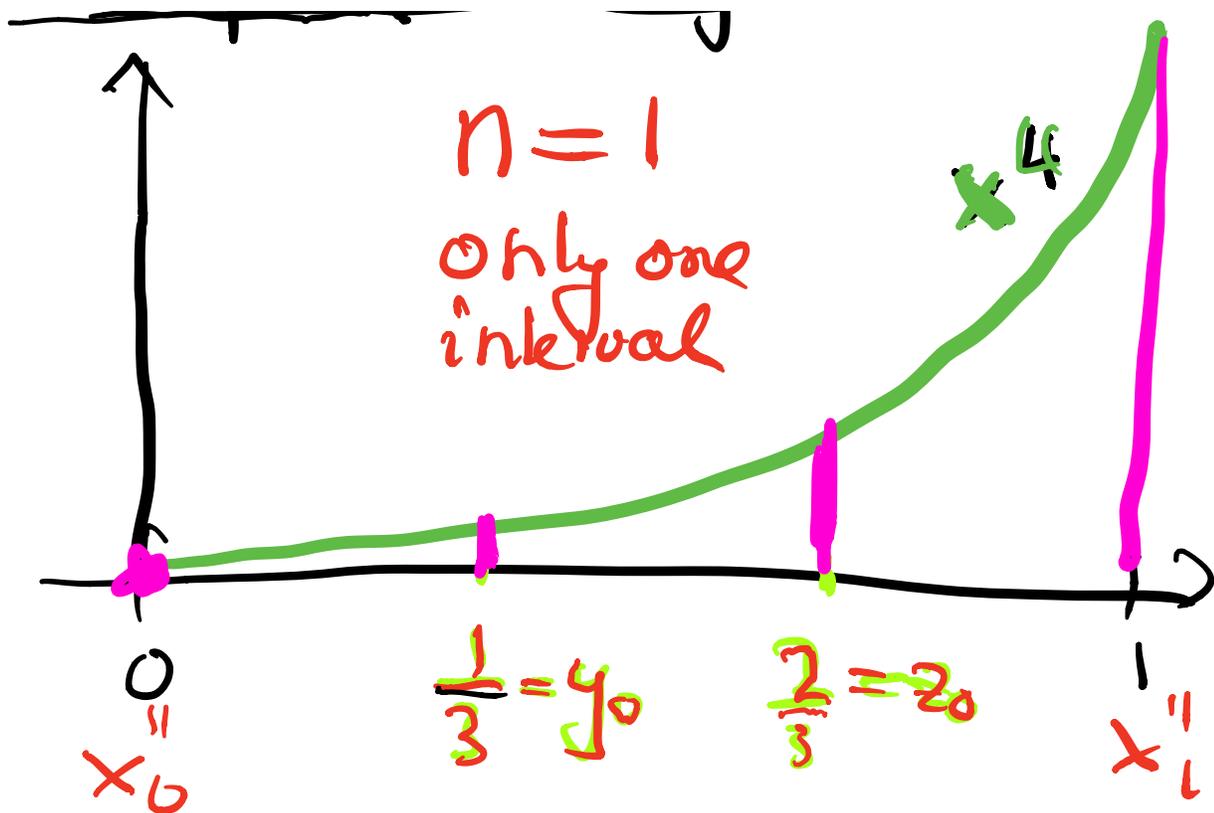
$$T = (L + R) / 2 = 0.2132$$



$$\begin{aligned}
 S &= \left[ f(x_0) + 4f(y_0) + f(x_1) \right] \cdot \frac{1}{6} \\
 &= \left[ 0 + 4\left(\frac{1}{2}\right)^4 + (1)^4 \right] \cdot \frac{1}{6} \\
 &= \left[ 0 + \frac{4}{16} + 1 \right] = \frac{5}{24} \\
 &= \boxed{0.208}
 \end{aligned}$$

8 promiles close

Kepler "Fass regel" Barbel rule



$$S_{3/8} = \left[ \frac{f(x_0) + 3f(y_0) + 3f(z_0) + f(x_1)}{8} \right] \cdot 1$$

$$= \left[ \frac{0 + 3\left(\frac{1}{3}\right)^4 + 3\left(\frac{2}{3}\right)^4 + 1}{8} \right]$$

4 points close

$$= \left[ \frac{0 + \frac{1}{27} + \frac{16}{27} + 1}{8} \right]$$

$$\frac{11}{54} = 0.2037$$

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