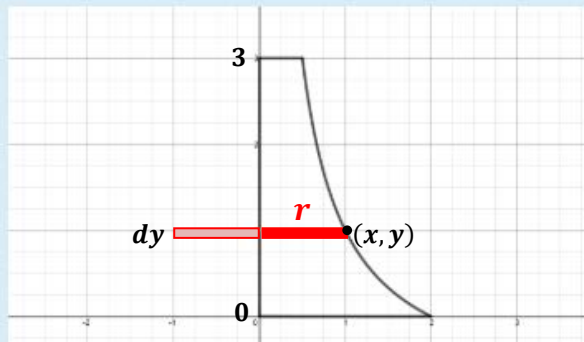


חשב את נפח הגוף המתקבל ע"י סיבוב התחום המוגבל ע"י הפונקציות



$$y = 3, y = 0, x = 0, x = \frac{2}{y+1}$$

סביב ציר ה-  $y$

פיתרון בדיסקות:

$$dV = \pi r^2 dy = \pi x^2 dy = \pi \left(\frac{2}{y+1}\right)^2 dy = -4\pi \frac{-1}{(y+1)^2} dy$$

$$V = \int_a^b dV = -4\pi \int_0^3 \frac{-1}{(y+1)^2} dy = -4\pi \left[ \frac{1}{y+1} \Big|_0^3 \right] = -4\pi \left[ \frac{1}{4} - 1 \right] = 3\pi \text{ Cube}$$

$$\int e^x \sin x dx = ? \rightarrow \begin{cases} u = e^x & \Rightarrow du = e^x dx \\ dv = \sin x dx & \Rightarrow v = -\cos x \end{cases}$$

$$\int u dv = uv - \int v du$$

$$\int e^x \sin x dx = -e^x \cos x + \int e^x \cos x dx$$

$$\int e^x \cos x dx \rightarrow \begin{cases} u = e^x & \Rightarrow du = e^x dx \\ dv = \cos x dx & \Rightarrow v = \sin x \end{cases}$$

$$\int e^x \cos x dx = e^x \sin x - \int e^x \sin x dx$$

$$\int e^x \sin x dx = -e^x \cos x + e^x \sin x - \int e^x \sin x dx$$

$$2 \int e^x \sin x dx = -e^x \cos x + e^x \sin x$$

$$\int e^x \sin x dx = \frac{e^x \sin x - e^x \cos x}{2} = \frac{e^x (\sin x - \cos x)}{2}$$