Date

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Tugas tutor kvt

1. Volume benda putar thd sumbu x

$x = 2$

$y = 0$

$y = x^2$

$$V = \pi \int_0^2 (x^2)^2 \, dx = \pi \frac{x^5}{5} \Big|_0^2$$

$$: \frac{32\pi}{5} \text{ satuan}$$

2 Panjang dari kurva $y = \frac{1}{2}(e^x + e^{-x})$, $0 \le x \le 2$

$$L = \int_0^2 \sqrt{1 + \left(\frac{dy}{dx}\right)^2} \, dx$$

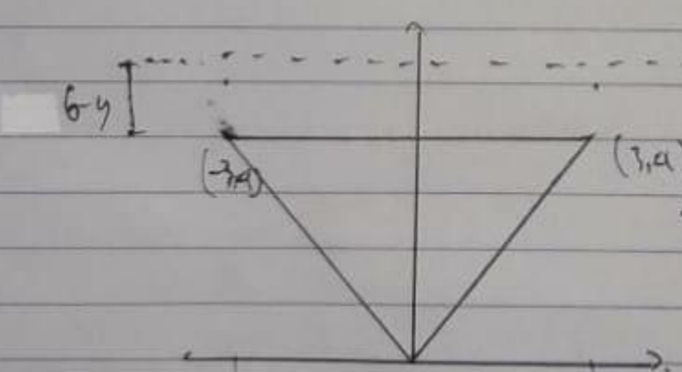
$$= \int_0^2 \sqrt{1 + \left(\frac{1}{2}(e^x - e^{-x})\right)^2} \, dx$$

$$= \int_0^2 \sqrt{1 + \frac{1}{4}(e^x - e^{-x})^2} \, dx$$

$$= \frac{(e^{2x} - 1)\sqrt{e^{-2x} + e^{2x} + 2}}{2(e^{2x} + 1)} \Big|_0^2$$

$$= \frac{(e^4 - 1)\sqrt{e^{-4} + e^4 + 2}}{2(e^4 + 1)} \quad : 3{,}62686$$

3.




$$g(y) = 2x$$

$$= 2\cdot\frac{3}{2}y = \frac{3y}{2}$$

$\rightarrow 4x = 3y$

$x = \frac{3}{4}y$

$$F = \int_a^b 62{,}4\,(6 - y)\,\frac{3}{2}y \, dy$$

$$= 62{,}4 \cdot \frac{3}{2} \int_0^4 6y - y^2 \, dy$$

$$= 93{,}6\left(3y^2 - \frac{1}{3}y^3\right)\Big|_0^4$$

$$= 93{,}6 \cdot (48 - 64/3) = 2496$$

KMKV