Latsol Tutor KUT 3 18/09/21

1. Tentukan luas yg diterfikan grafik berikut

$y = x$

$y = \frac{1}{x^2}$

$x = 2$

* $y = \frac{1}{x^2}$

$x^2 \neq 0$

$x \neq 0$

* titik potong $y = x$, $y = \frac{1}{x^2}$

$y = \frac{1}{x^2}$

$y = \frac{1}{y^2}$

$y^3 = 1$

$y = 1$

$$\int_1^2 x - \frac{1}{x^2}\, dx = \int_1^2 x - x^{-2}\, dx$$

$$= \frac{x^2}{2} - \frac{x^{-1}}{-1}\Big|_1^2$$

$$= \left(\frac{2^2}{2} - \frac{2^{-1}}{-1}\right) - \left(\frac{1^2}{2} - \frac{1^{-1}}{-1}\right)$$

$$= \frac{2}{2} = 1$$

2. $\int \frac{9r^2}{\sqrt{1-r^3}}\, dr = 9 \int \frac{r^2}{\sqrt{1-r^3}}\, dr$

$= 9 \int -\frac{2}{3}\, d\sqrt{1-r^3}$

$= 9 \cdot \frac{-2}{3} \sqrt{1-r^3} + c$

$= -6\sqrt{1-r^3} + c$

3. $\int_0^5 e^{-2x}\, dx = \frac{1}{-2} e^{-2x}\Big|_0^5$

$= \frac{1}{-2} e^{-2.5} - \frac{1}{-2} e^{-2.0}$

$= \frac{e^{-10} - 1}{-2}$