No.
Date

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1. $\int_{-1}^{5} \frac{dx}{(x-2)^2} \Rightarrow \int_{-1}^{5} \frac{dx}{(x-2)^2} + \int_{0}^{5} \frac{dx}{(x-2)^2}$

terdef pada $[-1, 5]$

$\ln t_1 = \int_{-1}^{0} \frac{dx}{(x-2)^2} = \lim_{R \to 0^-} \int_{-1}^{R} \frac{dx}{(x-2)^2} \Rightarrow \int_{-1}^{R} \frac{du}{u^2}$

$\lim_{R \to 0^-} \left. \frac{-1}{x} \right]_{-1}^{R} \Rightarrow -\frac{1}{R} - (1) \Rightarrow -\infty - 1 = -\infty$

karena $\int_{-1}^{0} \frac{dx}{(x-2)^2}$ divergen, maka $\int_{-1}^{5} \frac{dx}{(x-2)^2}$ diverge̲n

4. $\int_{0}^{3} \frac{2}{x^2-1} dx \Rightarrow \int_{0}^{3} \frac{2}{x^2-1} dx$

terdef pada $[0, 3]$ $= \int_{0}^{1} \frac{2}{x^2-1} dx + \int_{1}^{3} \frac{2}{x^2-1} dx$

$\lim_{R \to 1^+} \int_{R}^{3} \frac{2}{x^2-1} dx = \frac{2}{2} \ln |x^2-1| \Big]_{R}^{3}$

$\lim_{R \to 1^+} = \ln |x^2-1| \Big]_{R}^{3}$

$\lim_{R \to 1^+} \ln |8| - \ln |0| = \infty$

karena $\int_{1}^{3} \frac{2\,dx}{x^2-1}$ divergen, maka $\int_{0}^{3} \frac{2\,dx}{y^2-1}$ divergen

6. $\int_{0}^{2} \frac{x}{x^2-1} \Rightarrow \int_{0}^{2} \frac{x}{x^2-1} dx$

terdef pada $[0, 2]$ $= \int_{0}^{1} \frac{x}{x^2-1} dx + \int_{1}^{2} \frac{x}{x^2-1} dx$

$\ln t_1 = \lim_{R \to 1^-} \int_{0}^{R} \frac{x}{x^2-1} dx = \frac{1}{2} \int_{0}^{R} \frac{du}{u} = \frac{1}{2} \ln |\cancel{x^2}-1| \Big]_{0}^{R}$

$= \lim_{R \to 1^-} \frac{1}{2} \ln |-1| - \ln |0| = \infty$ Divergen karena $\int_0^1 \frac{x}{x^2-1}\,dx$ adalah divergen maka $\int_0^2 \frac{x}{x^2-1}\,dx$ divergen

11. $\int_{-2}^{0} \frac{dx}{2x+3} \Rightarrow \int_{-2}^{0} \frac{dx}{2x+3} =$

terdef pada $[-2, 0]$ $= \int_{-2}^{-3/2} \frac{dx}{2x+3} + \int_{-3/2}^{0} \frac{dx}{2x+3}$

$\ln t_1 = \lim_{R \to (-3/2)} \int_{-2}^{R} \frac{dx}{2x+3} = \frac{1}{2} \ln|2x+5| \Big]_{-2}^{R} = \frac{1}{2}\Big[\ln|-3+3| - \ln|-4+3|\Big]$

$=$ $= \infty$

karena $\int_{-2}^{(-3/2)} \frac{dx}{2x+3}$ divergen, maka $\int_{-2}^{0} \frac{dx}{2x+3}$ divergen

13. $\int_{1/2}^{2} \frac{dx}{x(\ln x)^{1/5}} \Rightarrow \int_{1/2}^{2} \frac{dx}{x(\ln x)^{1/5}}$

terdef pada $[2, 1/2]$ $= \int_{1/2}^{1} \frac{dx}{x(\ln x)^{1/5}} + \int_{1}^{2} \frac{dx}{x(\ln x)^{1/5}}$

$\ln t_1 = \lim_{R \to 1^-} \int_{1/2}^{R} \frac{dx}{x(\ln x)^{1/5}} = \int_{1/2}^{R} \frac{du}{(u)^{1/5}} = \frac{5}{4} (\ln x)^{4/5} \Big]_{1/2}^{R}$

$= \frac{5}{4}\Big[(\ln 1)^{4/5} - \ln\left(\frac{1}{2}\right)^{4/5}\Big] = -\frac{5}{4} \ln(2)^{4/5}$

$\ln t_2 = \lim_{R \to 1^+} \int_{R}^{2} \frac{dx}{x(\ln x)^{1/5}} = \frac{5}{4}\Big[\ln(2)^{4/5} - \ln(1)^{4/5}\Big] = \frac{5}{4} \ln(2)^{4/5}$

$\int_{1/2}^{2} \frac{dx}{x(\ln x)^{1/5}} = -\frac{5}{4} \ln(2)^{4/5} + \frac{5}{4} \ln(2)^{4/5}$

$\int_{1/2}^{2} \frac{dx}{x(\ln x)^{1/5}}$ konvergen dengan nilai 0