No.

Date

Nama: Prames Ray Lapian
NPM: 140810210059 - A
Slide:

1. $\int_0^2 x^{-2/5}\, dx \Rightarrow \lim_{R \to 0^+} \int_R^2 x^{-2/5}\, dx$

terdef pada $[0,2]$

$= \lim_{R \to 0^+} \frac{5}{3} x^{3/5} \Big|_R^2$

$= \lim_{R \to 0^+} \frac{5\sqrt[5]{2^3}}{3} - \frac{5\sqrt[5]{R^3}}{3} = \frac{5\sqrt[5]{8}}{3} - 0 = \frac{5\sqrt[5]{8}}{3}$ konvergen

3. $\int_1^3 \frac{1}{\sqrt{x-1}}\, dx \Rightarrow \lim_{R \to 1^+} \int_R^2 \frac{1}{\sqrt{x-1}}\, dx$

terdef pada $[1,3]$

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

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

Divergen

7. $\int_1^2 \frac{dx}{(x-1)^{1/3}} \Rightarrow \lim_{R \to 1^+} \int_R^2 \frac{dx}{(x-1)^{1/3}}$

terdef pada $[1,2]$

$= \lim_{R \to 1^+} \int_R^2 (x-1)^{-1/3}$

$= \lim_{R \to 1^+} \frac{3\sqrt[3]{(x-1)^2}}{2} \Big|_R^2 = \frac{3(1)}{2} - \frac{3(0)}{2} = \frac{3}{2}$ konvergen

8. $\int_0^1 \frac{\ln x}{x}\, dx \Rightarrow \lim_{R \to 0^+} \int_R^0 \frac{\ln x}{x}\, dx$

terdef pada $[0,1]$

$= \lim_{R \to 0^+} \int_R u\, du \Rightarrow \frac{(u)^2}{2}$

$= \lim_{R \to 0^+} \frac{|\ln x|^2}{2} \Big|_R^1$

$= \lim_{R \to 0^+} \frac{1}{2} \left[(\ln 1)(\ln 1) - (\ln R)(\ln R) \right]$

$= 0 - (\ln 0)(\ln 0) = -\infty$ Divergen

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10. $\int_1^4 \frac{dx}{\sqrt{x-1}} \Rightarrow \lim_{R \to 1^+} \int_R^4 \frac{dx}{\sqrt{x-1}}$

terdef pada $[1, 4]$

$= \lim_{R \to 1^+} \int \frac{du}{\sqrt{u}} \Rightarrow \int (u)^{-1/2} \Rightarrow \int 2\sqrt{u}$

$= \lim_{R \to 1^+} 2\sqrt{x-1} \Big|_R^4$

$= \lim_{R \to 1^+} 2\sqrt{3} - 2\sqrt{R-1} = 2\sqrt{3}$ konvergen

B 1. $\int_{-1}^{2} \frac{dx}{(x-2)^2} \Rightarrow \lim_{R \to 2^-} \int_{-1}^{R} \frac{dx}{(x-2)^2}$

terdef pada $[-1, 2]$

$= \lim_{R \to 2^-} \int \frac{du}{(u)^2} \Rightarrow -\frac{1}{u}$

$= \lim_{R \to 2^-} \frac{-1}{(R-2)} - \frac{-1}{(-1-2)} = \frac{-1}{(2-2)} - \frac{1}{3} = -(\infty + \frac{1}{3}) = \infty$ Divergen

2. $\int_{-2}^{-1} \frac{dx}{(x+1)^{4/3}} \Rightarrow \lim_{R \to -1^-} \int_{-2}^{R} \frac{dx}{(x+1)^{4/3}}$

terdef pada $[-2, -1)$

$= \lim_{R \to -1^-} \int_{-2}^{R} (x+1)^{4/3}\, dx$

$= \lim_{R \to -1^-} -3(x+1)^{-1/3} \Big|_{-2}^{R}$

$= \frac{-3}{\sqrt[3]{(R+1)}} + \frac{3}{\sqrt[3]{-1}}$

$= \lim_{R \to -1^-} -\left(\frac{3}{\sqrt[3]{(R+1)}} - \frac{3}{\sqrt[3]{-1}}\right) = -\left(-\infty - \frac{3}{(\sqrt{-1})}\right) = \infty$ Divergen

3. $\int_0^9 \frac{dx}{\sqrt{9-x}} \Rightarrow \lim_{R \to 9^-} \int_0^R \frac{dx}{\sqrt{9-x}}$

terdef pada $[0, 9)$

$= \lim_{R \to 9^-} 2\sqrt{9-x} \Big|_0^R$

$= \lim_{R \to 9^-} (2\sqrt{9-R}) - (2\sqrt{9-0}) = 0 - 2.3 = 6$ konvergen

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4. $\int_0^3 \frac{x}{9-x^2}\,dx \Rightarrow \lim_{R \to 3^-} \frac{1}{2} \int \frac{1}{u}\,du \Rightarrow \lim_{R \to 3^-} \frac{\ln|u|}{2} \Big|_0^R$

terdef pada $[0, 3)$

$= \lim_{R \to 3^-} \frac{\ln|R|}{2} - \frac{\ln|0|}{2}$

$= \frac{\ln 3}{2} - \infty$ Divergen

5. $\int_0^2 \frac{dx}{\sqrt{4-x^2}} \Rightarrow \lim_{R \to 2^-} \int_0^R \frac{dx}{\sqrt{2^2-x^2}}$

terdef pada $[0, 2)$

$= \lim_{R \to 2^-} \arcsin \frac{x}{2} \Big|_0^R$

$= \lim_{R \to 2^-} \arcsin \frac{(R)}{2} - \arcsin (0)$

$= \arcsin 1 = \frac{\pi}{2}$ konvergen

6. $\int_0^3 \frac{x}{\sqrt{9-x^2}}\,dx \Rightarrow \lim_{R \to 3^-} \int_0^R \frac{x}{\sqrt{9-x^2}}\,dx$

terdef pada $[0, 3)$

$= \lim_{R \to 3^-} \int_0^R \frac{x}{\sqrt{9-x^2}}\,dx$

$= \lim_{R \to 3^-} -\frac{1}{2} \int \frac{1}{\sqrt{u}}\,du$

$= \lim_{R \to 3^-} -\frac{1}{2}\, 2\sqrt{9-x^2}\, \Big|_0^R$

$= \lim_{R \to 3^-} -\sqrt{9-x^2} \Big|_0^R$

$= \lim_{R \to 3^-} -\sqrt{9-R^2} + \sqrt{9} = 3$ konvergen