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①. $y = \sqrt{\dfrac{x+1}{x+2}}$

$= \dfrac{d}{dx}\left[\left(\dfrac{x+1}{x+2}\right)^{\frac{1}{2}}\right] \longrightarrow \sqrt[n]{a^x} = a^{\frac{x}{n}}$

$= \dfrac{d}{dx}\left[u^{\frac{1}{2}}\right] \dfrac{d}{dx}\left[\dfrac{x+1}{x+2}\right] \longrightarrow$ ~~[illegible]~~ Chain rule (u)

$= \dfrac{1}{2} u^{\frac{1}{2}-1} \dfrac{d}{dx}\left[\dfrac{x+1}{x+2}\right] \longrightarrow$ Power rule

$= \dfrac{1}{2}\left(\dfrac{x+1}{x+2}\right)^{\frac{1}{2}-1} \dfrac{d}{dx}\left[\dfrac{x+1}{x+2}\right]$

$= \dfrac{1}{2}\left(\dfrac{x+1}{x+2}\right)^{-\frac{1}{2}} \dfrac{d}{dx}\left[\dfrac{x+1}{x+2}\right]$

$= \dfrac{1}{2}\left(\dfrac{x+1}{x+2}\right)^{-\frac{1}{2}} \dfrac{(x+2)\frac{d}{dx}[x+1]-(x+1)\frac{d}{dx}[x+2]}{(x+2)^2} \longrightarrow$ Quotient Rule.

$= \dfrac{x+2-(x+1)}{2.(x+2)^2}\left(\dfrac{x+1}{x+2}\right)^{-\frac{1}{2}}$

$= \dfrac{1}{2(x+2)^{\frac{3}{2}}(x+1)^{\frac{1}{2}}}$

② $F(x) = \dfrac{1}{(1-2x)^3} = (1-2x)^{-3}$

$1 \quad \begin{array}{r} 12 \\ 5 \\ \hline 70 \end{array}$

☆ $n=0 \quad F(x) = (1-2x)^{-3} \qquad F(0) = (1)^{-3} = 1$

$n=1 \quad F'(x) = (-3)(1-2x)^{-4}(1) \qquad F'(1) = (-3)(-1)^{-4} = -3$

$n=2 \quad F''(x) = (12)(1-2x)^{-5}(1) \qquad F''(2) = (12)(-3)^{-5} = -\dfrac{4}{81}$

$n=3 \quad F'''(x) = (70)(1-2x)^{-6}(1) \qquad F'''(3) = (70)(-5)^{-6}$

$= \dfrac{14}{3125}$

☆ Maka ..

$(1-2x)^{-3} = F(0) + F'(0)x + \dfrac{F''(0)}{2!}x^2 + \dfrac{F'''(0)}{3!}x^3 + \dots$

$= 1 - 3x + -\dfrac{4}{8}\dfrac{x^2}{2!} + \dfrac{14}{3125}\dfrac{x^3}{3!} + \dots$

$= 1 - 3x + -\dfrac{4}{16}x^2 + \dfrac{14}{18.750}x^3 + \dots$

$= 1 - 3x - \dfrac{1}{4}x^2 + \dfrac{14}{18.750}x^3 + \dots$

$= 1, 3, 0{,}25, 0{,}000746$

③ $\int_0^2 \frac{9x^3+9x^2-12x+1}{3x^2+4x-4}\,dx$

$8 + -6 - 7$

$-2 \quad 12 \quad +$

$$3x^2+4x-4 \,\overline{\big)\, 9x^3+9x^2-12x+1} \quad 3x \cancel{+1}$$

$$\frac{9x^3+12x^2-12x}{-3x^2 \qquad +1} \; -$$

Integralnya menjadi

$$\int_0^2 3x + \frac{-3x^2+1}{3x^2+4x-4}$$

Pecahan parsial

$$\frac{-3x^2+1}{3x^2+4x-4} = \frac{-3x^2+1}{(x+2)(x-\frac{1}{0.75})\cdot 3}$$

akar

$x = -2$

$x = \frac{1}{0.75}$

$$= \frac{-3x^2+1}{(x+2)(3x-4)} \quad 3x^2 \; 6x - 6x \; 6x$$

$$= \frac{A}{x+2} + \frac{B}{3x-4}$$

$$= A(3x-4) + B(x+2)$$

$x = \frac{1}{0.75}$ $= -3x^2+1 = A(3x-4) + B(x+2)$

$= B(\frac{1}{0.75}+2)$

$= 3.33 \rightarrow$

$x = -2$ $= -3x^2+1 = A(3x-4)$

$= -10$

Dipindai dengan CamScanner