Contoh :

① $y = \ln \sin x$

$y' = \frac{1}{\sin x} \cdot \cos x = \cot g\ x$

② $y = \ln (x + \sqrt{x^2+a^2})$

$y' = \frac{1}{x+\sqrt{x^2+a^2}} \left(1 + \frac{1}{\cancel{2}} (x^2+a^2)^{-\frac{1}{2}} \cdot \cancel{2}x\right)$

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

③ $y = e^{\arcsin x}$

$y' = e^{\arcsin x} \cdot \frac{1}{\sqrt{1-x^2}}$

④ $y = \ln (x^2 \sin x)$

$y' = \frac{1}{x^2 \sin x} (2x \sin x + \cos x \cdot x^2)$

No

Date

⑦ $y = \sin^9 x$

$\frac{dy}{dx} = \cos x \cdot 9 \sin^8 x$

⑨ $y = \left(\frac{x^2+1}{\cos x}\right)^4$

$\frac{dy}{dx} = 4\left(\frac{x^2+1}{\cos x}\right)^3 \left(\frac{2x(\cos x) - (-\sin x)(x^2+1)}{(\cos x)^2}\right)$

$= 4\left(\frac{x^2+1}{\cos x}\right)^3 \left(\frac{2x \cos x + x^2 \sin x + \sin x}{(\cos x)^2}\right)$

⑪ $\cos(x^2) \sin^2 x = y$

$y' = -\sin x^2 \cdot 2x \cdot \sin^2 x + \cos x^2 \cdot 2 \cdot \cos x \sin x$

$y' = -2x \sin x^2 \cdot \sin^2 x + 2 \cos x \sin x \cos x^2$

$= -2x \sin x^2 \cdot \sin^2 x + \sin 2x \cos x^2$

$y' = -2x \sin x^2 \cdot \sin^2 x + 2 \cos x \sin x \cos$
$= -2x \sin x^2 \cdot \sin^2 x + \sin 2x \cos x^2$

13 $y = \sin [(x^2+3)^4]$

$y' = \cos [(x^2+3)^4] \cdot 4 (2x) \cdot (x^2+3)^3$
$= 8x (x^2+3)^3 \cdot \cos [(x^2+3)^4]$

15 $\int \frac{x^4 - 2x^3 + 1}{x^2} dx = \int (x^4 - 2x^3 + 1)(x$
$= \int x^2 - 2x + x^{-2}$
$= \frac{1}{3} x^3 - x^2 - x^{-1} + c$
$= \frac{1}{3} x^3 - x^2 - \frac{1}{x} + c$

No
Date

17 $\int (3 \sin t - 2 \cos t)\, dt = 3 . -\cos t - 2 \sin t + c$
$= -3\cos t - 2 \sin t + c$

19 $\int 15x^2 (5x^3 - 18)^7 \, dx$

misal $u = 5x^3 - 18$
$du = 15x^2 \, dx$

$= \int (5x^3 - 18)^7 \, 15x^2 \, dx$

$= \int u^7 \, du$

$= \frac{1}{8} u^8 + C$

$= \frac{1}{8} (5x^3 - 18)^8 + C$

$$= \frac{1}{8}(5x^3 - 18)^8 + C$$

(21) $$\int \frac{3y}{\sqrt{2y^2+5}}\,dy = \int 3y\,(2y^2+5)^{-\frac{1}{2}}\,dy$$

misal $u = 2y^2 + 5$

$du = 4y\,dy$

$$= \int 3\cancel{y}\,(u)^{-\frac{1}{2}}\,\frac{du}{4\cancel{y}}$$

$$= \frac{3}{2}\,u^{\frac{1}{2}} + C$$

$$= \frac{3}{2}\sqrt{2y^2+5} + C$$