8. Find $\frac{dy}{dx}$ if

$$y = x^{(x^4+3x-1)}$$

9. $\int \csc(5x)\,dx$

1. $\int \frac{5x}{2x+1}\,dx$

2. $\int \frac{4x}{\sqrt{x^2-3}}\,dx$

3. Find the general solution of $\sqrt{x^2-16}\,y' = \frac{5}{x}$

4. Find $\frac{dy}{dx}$ if $y = \ln\left(\frac{\sqrt[3]{x}}{x+6}\right)$

*Note: Write answer as a single unit

6. Find the exact area defined by $y = 4e^{-3x}$, the x-axis and the lines $x=1$ and $x=$

10. $\int \frac{-8^{\cot x}}{\sin^2 x}\, dx$

7. If $y = 2(7^{-3x})$, find $\frac{dy}{dx}$.

1. $\frac{5}{4}(2x+1) - \frac{5}{4}\ln|2x+1| + C$

2. $4\sqrt{x^2-3} + C$

3. $y = \frac{5}{4}\operatorname{arcsec}\frac{|x|}{4} + C$

4. $\frac{dy}{dx} = \frac{-2x+6}{3x(x+6)}$

5. $\frac{dy}{dx} = \frac{-x^2}{2(1+x^3)^2}$

6. $\frac{4}{3}\left(\frac{1}{e^3} - \frac{1}{e^{12}}\right)$

7. $\frac{dy}{dx} = 2 \cdot \ln 7 \cdot -3 \cdot 7^{-3x}$

$\frac{dy}{dx} = -6\ln 7 \cdot 7^{-3x}$

8. $\ln y = (x^4+3x-1)\ln x$

$\frac{1}{y}\frac{dy}{dx} = (x^4+3x-1)\frac{1}{x} + \ln x(4x^3+3)$

$\frac{dy}{dx} = x^{(x^4+3x-1)}\left[\frac{x^4+3x-1}{x} + \ln x(4x^3+3)\right]$

9. $-\frac{1}{5}\ln|\csc x + \cot x| + C$

10. $\frac{8^{\cot x}}{\ln 8} + C$

11. $\frac{-7}{2}\arctan\left(\frac{x+4}{2}\right) + C$