

Solve:

1) What is $\frac{d}{dx} -3\cos(x) + 5\csc(x)$?

$$= 3\sin x - 5\csc x \cot x$$

2) Given $d(x) = -5\sec(x) + 5\cot(x)$.
What is $\frac{dd}{dx}$?

$$= -5\sec x \tan x - 5\csc^2 x$$

3) What is the derivative of:
 $v(x) = 2\sec(x) + 5\sin(x)$?

$$v'(x) = 2\sec x \tan x + 5\cos x$$

4) Given $w(x) = 4\tan(x) - 4\sin(x)$.
What is $\frac{dw}{dx}$?

$$w'(x) = 4\sec^2 x - 4\cos x$$

5) Given $s(x) = -4\sin(x) + 3\cot(x)$.
What is $\frac{ds}{dx}$?

$$= -4\cos x - 3\csc^2 x$$

6)

$$\int 2\csc(2x-3)\cot(2x-3) dx =$$

$$2 \int -\csc u \cot u \cdot \frac{du}{2} \quad \begin{array}{l} u = 2x-3 \\ \frac{du}{dx} = 2 \\ dx = \frac{du}{2} \end{array}$$

$$\int -\csc u \cot u du$$

$$= \csc u + C$$

$$= \boxed{\csc(2x-3) + C}$$

7)

$$\int \sec^2(-4x+1) dx =$$

$$\int \sec^2 u \cdot \frac{-du}{4} \quad \begin{array}{l} u = -4x+1 \\ \frac{du}{dx} = -4 \\ dx = \frac{-du}{4} \end{array}$$

$$-\frac{1}{4} \int \sec^2 u du$$

$$= -\frac{1}{4} \tan u + C$$

$$= \boxed{-\frac{1}{4} \tan(-4x+1) + C}$$

8)

$$\int 3\sec(-5x+3)\tan(-5x+3) dx =$$

$$3 \int \sec u \tan u \cdot \frac{-du}{5} \quad \begin{array}{l} u = -5x+3 \\ \frac{du}{dx} = -5 \\ dx = \frac{-du}{5} \end{array}$$

$$-\frac{3}{5} \int \sec u \tan u du$$

$$= -\frac{3}{5} \sec u + C$$

$$= \boxed{-\frac{3}{5} \sec(-5x+3) + C}$$

10)

$$\int \csc^2(-3x-3) dx =$$

$$\int -\csc^2 u \cdot \frac{-du}{3} \quad \begin{array}{l} u = -3x-3 \\ \frac{du}{dx} = -3 \\ dx = \frac{-du}{3} \end{array}$$

$$-\frac{1}{3} \int -\csc^2 u du$$

$$= -\frac{1}{3} \cot u + C = \boxed{-\frac{1}{3} \cot(-3x-3) + C}$$

9)

$$\int 3\sin(3x+3) dx =$$

$$3 \int -\sin u \cdot \frac{du}{3} \quad \begin{array}{l} u = 3x+3 \\ \frac{du}{dx} = 3 \\ dx = \frac{du}{3} \end{array}$$

$$\int -\sin u du = \cos u + C$$

$$= \boxed{\cos(3x+3) + C}$$