

$$11 - \int (2-7t)^{2/3} \cdot dt$$

$$12 - \int \frac{1}{\sqrt{1-x}} \cdot dx$$

$$13 - \int (3x-1)^{2/3} \cdot dx = \frac{1}{3} \int 3(3x-1)^{2/3} \cdot dx = \frac{1}{3} \frac{(3x-1)^{2/3+1}}{2/3+1} + C$$

$$14 - \int (1-x^3)^2 \cdot 3x^2 \cdot dx = - \int -3x^2 (1-x^3)^2 \cdot dx = \frac{-(1-x^3)^3}{3} + C$$

$$15 - \int \frac{3x^2}{\sqrt{1+x^3}} \cdot dx = \int 3x^2 (1+x^3)^{-1/2} \cdot dx = \frac{(1+x^3)^{1/2}}{1/2} + C$$

$$16 - \int \frac{dx}{(3x+2)^2} \cdot dx$$

$$17 - \int x \sqrt{2x^2+1} \cdot dx = \int x (2x^2+1)^{1/2} \cdot dx = \frac{1}{4} \int 4x (2x^2+1)^{1/2} \cdot dx$$

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

$$18 - \int \frac{y dy}{\sqrt{2y^2+1}} = \int y (2y^2+1)^{-1/2} \cdot dy = \frac{1}{4} \int 4y (2y^2+1)^{-1/2} \cdot dy$$

$$= \frac{1}{4} \cdot \frac{(2y^2+1)^{1/2}}{1/2} + C$$

$$19 - \int \frac{(z+1) dz}{\sqrt{z^2+2z+2}} = \frac{1}{2} \int 2(z+1)(z^2+2z+2)^{-1/2} \cdot dz$$

$$= \frac{1}{2} \frac{(z^2+2z+2)^{1/2}}{1/2} + C$$

كامل الروال الجيبية

$$1 - \int \cos x \cdot dx = \sin x + C$$

$$\rightarrow y = \sin x, y' = \cos x$$

$$2 - \int \sin x \cdot dx = -\cos x + C$$

$$\rightarrow y = \cos x, y' = -\sin x$$

$$3 - \int \sec x \tan x \cdot dx = \sec x + C$$

$$\rightarrow y = \tan x, y' = \sec^2 x$$

$$4 - \int \sec^2 x \cdot dx = \tan x + C$$

$$\rightarrow y = \cot x, y' = -\csc^2 x$$

$$5 - \int \csc^2 x \cdot dx = -\cot x + C$$

$$\rightarrow y = \csc x, y' = -\csc x \cot x$$

$$6 - \int \csc x \cot x \cdot dx = -\csc x + C$$

$$\rightarrow y = \csc x, y' = -\csc x \cot x$$

Examples:

$$1) \int \sin 3X \, dX = \frac{-\cos 3X}{3} + C = \left[\frac{-1}{3} \int (\sin 3X) \cdot dX \right] = \frac{-1}{3} \cos 3X + C$$

$$2) \int \sin^2 X \cos X \, dX = \int (\sin X)^2 \cos X \, dX = \frac{1}{3} \sin^3 X + C$$

$$3) \int \sin^3 X \cos^2 X \, dX = \int \sin^2 X \cos^2 X \sin X \, dX = \int (1 - \cos^2 X) \cos^2 X (\sin X) \, dX$$
$$\int \cos^2 X \sin X \, dX - \int \cos^4 X \sin X \, dX \Rightarrow y = \frac{1}{3} \cos^3 X - \frac{1}{5} \cos^5 X + C$$

$$4) \int \sin^2 X \, dX = \int \frac{1 - \cos 2X}{2} \, dX = \frac{1}{2} X - \frac{1}{4} \sin 2X + C$$

Examples:

$$1) \int \sin 3X \, dX \rightarrow -\frac{\cos 3X}{3} + C$$

$$2) \int \cos(2X+4) \, dX \rightarrow \frac{1}{2} \sin(2X+4) + C$$

$$3) \int \sec^2(X+2) \, dX \rightarrow \tan(X+2) + C$$

$$4) \int \sec 2X \tan 2X \, dX \rightarrow \frac{1}{2} \sec 2X + C$$

$$5) \int \csc\left(X + \frac{\pi}{2}\right) \cot\left(X + \frac{\pi}{2}\right) \, dX \rightarrow -\csc\left(X + \frac{\pi}{2}\right) + C$$

$$6) \int \csc^2(2X-3) \, dX \rightarrow -\frac{1}{2} \cot(2X-3) + C$$

$$7) \int X \sin(2X^2) \, dX \rightarrow -\frac{1}{4} \cos(2X^2) + C$$

$$8) \int \frac{\cos \sqrt{X} \, dX}{\sqrt{X}} = \int X^{-\frac{1}{2}} \cos X^{1/2} \, dX = 2 \int \frac{1}{2} X^{-1/2} \cos^{1/2} \, dX = 2 \sin X^{1/2} + C = 2 \sin \sqrt{X} + C$$

$$9) \int \sin 2t \, dt = \frac{1}{2} (-\cos 2t) = \frac{-\cos 2t}{2} + C$$

$$10) \int \cos(3\theta-1) \, d\theta = \frac{1}{3} \sin(3\theta-1) + C$$

$$11) \int 4 \cos 3y \, dy = \frac{4}{3} \sin 3y + C$$

$$12) \int \sin^2 X \cos X \, dX = \frac{\sin^3 X}{3} + C$$

$$13) \int \cos^2 2y \sin 2y \, dy = -\int -\sin 2y \cos^2 2y \, dy = -\frac{1}{2} \frac{\cos^3 2y}{3} + C = \frac{-\cos^3 2y}{6} + C$$

$$14) \int \sec^2 2\theta \cdot d\theta = \frac{1}{2} \tan 2\theta + C$$

$$15) \int \sec \frac{X}{2} \tan \frac{X}{2} \, dX = 2 \int \frac{1}{2} \sec \frac{X}{2} \tan \frac{X}{2} \, dX = 2 \sec \frac{X}{2} + C$$

$$16) \int \frac{d\theta}{\cos^2 \theta} = \int \sec^2 \theta \cdot d\theta = \tan \theta + C$$

$$17) \int \frac{dX}{\sin^2 X} = \int \sec^2 \theta \cdot d\theta = -\cot X + C$$

$$18) \int \sec^3 \theta \tan \theta \, d\theta = \int \sec \theta \tan \theta \sec^2 \theta \, d\theta = \frac{1}{2} \sec \theta = \frac{1}{2} \cdot \frac{1}{3} \sec^3 \theta + C$$

$$19) \int 2 \sin z \cos z \, dz = \frac{2 \sin^2 z}{2} = \sin^2 z + C$$

$$20) \int \cos^3 y \cos y \, dy = \int \cos^2 y \cos^2 y \, dy = \frac{2}{5} \sin^5 y = \frac{1}{5} \sin^4 y$$