1.– Solve the following integrals:

a) $\displaystyle\int \sin 3x \sin 2x \; dx$ **b)** $\displaystyle\int \cos 4x \cos 2x \; dx$

c) $\displaystyle\int \sin 3x \cos 5x \; dx$ **d)** $\displaystyle\int \cos 2x \sin 3x \; dx$

2.– Find the following integrales:

a) $\displaystyle\int \frac{\cos^4 x}{\sin^5 x} \; dx$ **b)** $\displaystyle\int \sin^2 x \cos^5 x \; dx$

c) $\displaystyle\int \frac{1}{\sin^2 x \cos^2 x} \; dx$ **d)** $\displaystyle\int \frac{1}{\sin^3 x \cos x} \; dx$

3.– Obtain the primitives:

a) $\displaystyle\int \frac{1}{\cos x - \sin x} \; dx$ **b)** $\displaystyle\int \frac{5\cos x + 6}{2\cos x + \sin x + 3} \; dx$

c) $\displaystyle\int \frac{1 + \tan x}{1 - \tan x} \; dx$ **d)** $\displaystyle\int \frac{3\sin x + 2\cos x}{2\sin x + 3\cos x} \; dx$

4.– Solve the following integrals:

a) $\displaystyle\int \frac{\sin x}{1 + \cos x + \cos 2x} \; dx$ **b)** $\displaystyle\int \frac{\tan x}{1 + \sin^2 x \tan^2 x} \; dx$

c) $\displaystyle\int \frac{\sin 2x}{(2 + \sin x)^2} \; dx$ **d)** $\displaystyle\int \frac{1}{\sin x + \sin 2x} \; dx$

e) $\displaystyle\int \frac{\cos x}{\cos 2x} \; dx$ **f)** $\displaystyle\int \frac{1}{\cos x \cos 2x} \; dx$

g) $\displaystyle\int \frac{\cos^2 x}{4\cos^2 x + \sin^2 x} \; dx$ **h)** $\displaystyle\int \frac{\sin 2x}{1 + \sin^2 x} \; dx$

5.– Solve, depending on the values of $a \in \mathbb{R}$, the following integrals:

a) $\displaystyle\int \frac{1}{1 + a\cos^2 x} \; dx$ **b)** $\displaystyle\int \frac{1}{1 + a\sin^2 x} \; dx$

c) $\displaystyle\int \frac{1}{2 - a\sin^2 x} \; dx$ **d)** $\displaystyle\int \frac{1}{3 - a\cos^2 x} \; dx$

6.– Obtain the following primitives:

a) $\displaystyle\int \sin^5 x \sqrt[3]{\cos x} \; dx$ **b)** $\displaystyle\int \frac{1}{\sqrt{\sin^3 x \cos^5 x}} \; dx$

c) $\displaystyle\int \sin^3\left(\frac{x}{2}\right) \cos^5\left(\frac{x}{2}\right) \; dx$ **d)** $\displaystyle\int \frac{1}{\sin\left(\frac{x}{2}\right) \cos^3\left(\frac{x}{2}\right)} \; dx$

e) $\displaystyle\int \operatorname{cotan}^3 x \operatorname{cosec}^4 x \; dx$ **f)** $\displaystyle\int \operatorname{cotan}^3 x \operatorname{cosec}^3 x \; dx$
