

① Primitives immédiates

$$(a) \int \frac{x+6}{\sqrt{x}} dx = \int (x^{1/2} + 6x^{-1/2}) dx = \frac{x^{3/2}}{3/2} + 6 \frac{x^{1/2}}{1/2} + C = \frac{2}{3} x\sqrt{x} + 12\sqrt{x} + C$$

$$(b) \int \frac{\cos x}{\sin^2 x} dx = \int (\sin x)' (\sin x)^{-2} dx = \frac{(\sin x)^{-1}}{-1} + C = -\frac{1}{\sin x} + C$$

$$(c) \int \frac{(x^2+1)(x^2-2)}{\sqrt[3]{x^2}} dx = \int \frac{1}{x^{2/3}} (x^4 - x^2 - 2) dx = \int (x^{10/3} - x^{4/3} - 2x^{-2/3}) dx =$$

$$= \frac{x^{13/3}}{13/3} - \frac{x^{7/3}}{7/3} - \frac{2x^{1/3}}{1/3} + C = \frac{3}{13} (\sqrt[3]{x})^{13} - \frac{3}{7} (\sqrt[3]{x})^7 - 6\sqrt[3]{x} + C.$$

$$(d) \int (a+bx^3)^2 dx = \int (a^2 + 2abx^3 + b^2x^6) dx =$$

$$= a^2x + 2ab \frac{x^4}{4} + b \frac{x^7}{7} + C$$

$$(e) \int (\cos^2 \theta - \sin \theta) d\theta = \int \left(\frac{1+\cos 2\theta}{2} - \sin \theta \right) d\theta =$$

$$= \frac{1}{2} \theta + \frac{1}{2} \frac{\sin 2\theta}{2} + \cos \theta + C.$$