

**Problema 1** Calcular las siguientes integrales:

$$1. \int \frac{x^3 + x - 1}{x + 2} dx = \frac{x^3}{3} - x^2 + 5x - 11 \ln |x + 2| + C$$

$$2. \int \frac{\sqrt[3]{x^2} - \sqrt{x}}{\sqrt[3]{x^2}} dx = x - \frac{3\sqrt[3]{x^2}}{2} + C$$

$$3. \int x \sin(x^2 + 1) dx = -\frac{1}{2} \cos(x^2 + 1) + C$$

$$4. \int 5xe^{x^2+4} dx = \frac{5}{2} e^{x^2+4} + C$$

$$5. \int \frac{4x}{\sqrt{1 - (x^2 + 1)^2}} dx = 2 \arcsin(x^2 - 1) + C$$

$$6. \int \frac{5x}{1 + (x^2 - 1)^2} dx = \frac{5}{2} \arctan(x^2 - 1) + C$$

$$7. \int x^2 e^x dx = e^x(x^2 - 2x + 2) + C$$

$$8. \int x \ln x dx = \frac{x^2}{2} \left( \ln x - \frac{1}{2} \right) + C$$

$$9. \int \frac{9x}{x^2 + 1} dx = \frac{9}{2} \ln |x^2 + 1| + C$$

$$10. \int x \sin x dx = -x \cos x + \sin x + C$$