Evalute the following indefinite integrals.

$$\int e^x = e^x + C\,dx \qquad \int x^2 + \cos x\,dx = \frac{1}{3}x^3 + \sin x + C$$

$$\int 5x^7 - 3x^3 + 2x^{3/2}\,dx = \frac{5}{8}x^8 - \frac{3}{4}x^4 + \frac{4}{5}x^{5/2} + C$$

$$\int 3\sin x \;\; + 2x^4 + \frac{4}{x^2}\,dx = -3\cos x + \frac{2}{5}x^5 - \frac{4}{x} + C$$

$$\int \sec x \tan x - \frac{3}{x}\,dx = \sec x - 3\ln x + C \qquad \int e^{3x}\,dx = \frac{e^{3x}}{3} + C$$

Find values of the constant(s) A (or A and B) such that F is an anti-derivative of f.

$$f(x) = x^2\,e^{4x^3}, \qquad F(x) = Ae^{4x^3}, \qquad A = \frac{1}{12}$$

$$f(x) = e^x \cos x, \qquad F(x) = Ae^x \cos x + Be^x \sin x$$

$$A = \frac{1}{2}, \qquad B = \frac{1}{2}$$

Evalute the following indefinite integrals.

$$\int xe^{x^2}\,dx = \frac{1}{2}e^{x^2}+C \qquad \int (3x^4+x)^5(12x^3+1)\,dx = \frac{1}{6}(3x^4+x)^6+C$$

$$\int \frac{x^2}{x^3+5}\,dx = \frac{1}{3}\ln(x^3+5)+C \qquad \int e^x \sin(e^x), dx = -\cos(e^x)+C$$

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