$$\int k\,dx = kx + C$$
$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$
$$\int \frac{1}{2\sqrt{x}} dx = \sqrt{x} + C$$
$$\int \frac{1}{n\sqrt[n]{x^{n-1}}} dx = \sqrt[n]{x} + C$$
$$\int a^x dx = \frac{a^x}{\ln a} + C$$
$$\int e^x dx = e^x + C$$
$$\int \frac{1}{x} dx = \ln|x| + C$$
$$\int \operatorname{sen} x\, dx = -\cos x + C$$
$$\int \cos x\, dx = \operatorname{sen} x + C$$
$$\int (1+\operatorname{tg}^2 x) dx = \int \frac{1}{\cos^2 x} dx = \operatorname{tg} x + C$$
$$\int \frac{1}{\sqrt{1-x^2}} dx = \arcsin x + C$$
$$\int \frac{1}{1+x^2} dx = \operatorname{arctg} x + C$$

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$$\int f(x) \pm g(x)\, dx = \int f(x)\,dx \pm \int g(x)\,dx$$
$$\int k\, f(x)\, dx = k \int f(x)\,dx$$
$$\int f(x)\, g(x)\, dx \neq \int f(x)\,dx \cdot \int g(x)\,dx$$
$$\int \frac{f(x)}{g(x)} dx \neq \frac{\int f(x)\,dx}{\int g(x)\,dx}$$

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$$\int (3x^2+2x+1)\,dx = 3\frac{x^3}{3} + 2\frac{x^2}{2} + x + C = x^3 + x^2 + x + C$$
$$\int 2^x + \frac{1}{x}\, dx = \frac{2^x}{\ln 2} + \ln|x| + C$$
$$\int e^x + \frac{1}{1+x^2} dx = e^x + \operatorname{arctg} x + C$$
$$\int \frac{2}{\sqrt{1-x^2}} dx = 2\arcsin x + C$$
$$\int 3\cos x\, dx = 3\operatorname{sen} x + C$$

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$$\int \sqrt{2x} + \sqrt[3]{x^4}\, dx = \sqrt{2}\int x^{1/2} dx + \int x^{4/3} dx$$
$$= \sqrt{2}\,\frac{x^{3/2}}{3/2} + \frac{x^{7/3}}{7/3} = \frac{2\sqrt{2x^3}}{3} + \frac{3\sqrt[3]{x^7}}{7} + C$$
$$\int x\sqrt{x}\, dx = \int x^{3/2} dx = \frac{x^{5/2}}{5/2} + C = \frac{2}{5}\sqrt{x^5} + C$$
$$\int \frac{1}{2x^2} dx = \frac{1}{2}\int x^{-2} dx = \frac{1}{2}\,\frac{x^{-1}}{-1} + C = -\frac{1}{2x} + C$$
$$\int \frac{x^3+2x+1}{x^2} = \int \Big(x + \underbrace{2x^{-1}}_{\frac{2}{x}} + x^{-2}\Big) dx = \frac{x^2}{2} + 2\underbrace{\frac{x^0}{0}}_{\ln|x|} + \frac{x^{-1}}{-1}$$
$$= \frac{x^2}{2} + 2\ln|x| - \frac{1}{x} + C$$

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