Integral definida:

1. $\int \frac{x+1}{\sqrt{x}}\,dx$

$\int \sqrt{x} + \frac{1}{\sqrt{x}}\,dx$

$\frac{2}{3}x^{3/2} + 2\sqrt{x} + C$

2. $\int x^5(x^4-2)^2\,dx$

$\int x^5(x^8+4x^4-4)\,dx$

$\int (x^{13}+4x^9-4x^5)\,dx$

$\frac{x^{14}}{14} + \frac{2}{5}x^{10} - \frac{2}{3}x^6 + C$

3. $\int \frac{3x^3+5x^2+2x+3}{3x+2}\,dx$

$\int x^2+x+\frac{3}{3x+2}\,dx$

$\frac{x^3}{3} + \frac{x^2}{2} + \ln|3x+2| + C$

División de Polinomios:

$$\begin{array}{r|l} 3x^3+5x^2+2x+3 & 3x+2 \\ \hline -3x^3-2x^2 & x^2+x \\ \hline 3x^2 & \\ -3x^2-2x & \\ \hline 3 & \end{array}$$

4. $\int \pi^{ex} e^{\pi x} dx$

$\int [\pi^{e} e^{\pi}]^{x} dx$

$\frac{[\pi^{e} e^{\pi}]^{x}}{\ln|\pi^{e} \cdot e^{\pi}|} + C$

$\frac{[\pi^{e} e^{\pi}]^{x}}{e \ln|\pi| + \pi \ln|e|} + C \longrightarrow \frac{[\pi^{e} e^{\pi}]^{x}}{e \ln|\pi| + \pi} + C$

6. $\int (1 + \sin x + \cos x)\, dx$

$x - \cos x + \sin x + C$

7. $\int \frac{dx}{1 + 3x^2}$

$\frac{1}{\sqrt{3}} \int \frac{d[\sqrt{3}x]}{1 + \sqrt{3}^2 x^2}$

$\frac{1}{\sqrt{3}} \operatorname{Arctan}(\sqrt{3}x) + C$