

$$\int 30x^2 \text{ArcTan}[5x^3] dx$$

$$u = \text{ArcTg } 5x^3$$

$$du = \frac{15x^2}{25x^6 + 1} dx$$

$$\int dv = \int 30x^2 dx$$

$$v = 30 \frac{x^3}{3} = \frac{10x^3}{1}$$

$$= 10x^3 \text{ArcTg } 5x^3 - \int \frac{150x^5}{25x^6 + 1} dx$$

$$= 10x^3 \text{ArcTg } 5x^3 - \ln(25x^6 + 1) + C$$

$$\int 27x^2 \text{Cos}[3x] dx = 9x^2 \text{sen } 3x + 6x \text{cos } 3x - 2 \text{sen } 3x + C$$

$$27x^2 \quad + \quad \text{cos } 3x$$

$$54x \quad - \quad \frac{1}{3} \text{sen } 3x$$

$$54 \quad + \quad -\frac{1}{9} \text{cos } 3x$$

$$\int 0 \quad - \quad -\frac{1}{27} \text{sen } 3x$$

$$\int e^{3x} \text{Sin}[4x] dx = \frac{1}{3} \text{sen } 4x e^{3x} - \frac{4}{9} \text{cos } 4x e^{3x} - \frac{16}{9} \int e^{3x} \text{sen } 4x dx$$

$$\text{sen } 4x \quad + \quad e^{3x} \quad \frac{25}{9}$$

$$\text{cos } 4x \cdot 4 \quad - \quad \frac{1}{3} e^{3x}$$

$$\int -\text{sen } 4x \cdot 16 \pm \frac{1}{9} e^{3x} \quad \frac{3}{25} \text{sen } 4x e^{3x} - \frac{4}{25} \text{cos } 4x e^{3x} + C$$

$$\int \frac{5x-8}{x^2-7x+10} dx = \frac{17}{3} \ln(x-5) - \frac{2}{3} \ln(x-2) + C$$

$$\frac{5x-8}{(x-5)(x-2)} = \frac{\frac{17}{3}}{x-5} + \frac{-\frac{2}{3}}{x-2}$$

$$x=5 \quad \frac{5x-8}{x-2} = \frac{17}{3}$$

$$x=2 \quad \frac{5x-8}{x-5} = \frac{2}{-3}$$

$$\int \frac{4x^2+16}{x^3-4x^2} dx = -\ln x - \frac{4x^{-1}}{-1} + 5 \ln(x-4) = \left[-\ln x + \frac{4}{x} + 5 \ln(x-4) \right] + C$$

$$\frac{4x^2+16}{x^2(x-4)} = \frac{4x^2+16}{x \cdot x \cdot (x-4)} = \frac{A}{x} + \frac{B}{x^2} + \frac{C}{x-4}$$

$$\boxed{4x^2+16} = Ax(x-4) - 4(x-4) + 5x^2 \boxed{-Ax^2} - 4xA - 4x + 16 \boxed{+5x^2}$$

$$x=4 \quad \frac{4x^2+16}{x^2} = \frac{80}{16} = 5$$

$$x=0 \quad \frac{4x^2+16}{x-4} = \frac{16}{-4} = -4$$

$$\int \frac{27+8x+20x^2}{4x^3+4x^2+9x+9} dx = \frac{3}{3} \ln(x+1) + \frac{8x}{8x} \ln(4x^2+9) + C$$

$$\frac{27+8x+20x^2}{(x+1)(4x^2+9)} = \frac{A}{x+1} + \frac{Bx+C}{4x^2+9}$$

$$27+8x+20x^2 = \frac{3}{3} A(4x^2+9) + (Bx+C)(x+1)$$

$$\boxed{27} + 8x + \underline{20x^2} = \underline{12x^2} + \boxed{27} + \underline{Bx^2} + Bx + Cx + \boxed{C}$$

$$4x^2(x+1) + 9(x+1) = (x+1)(4x^2+9)$$

$$x=-1 \quad \frac{27+8x+20x^2}{4x^2+9} = \frac{39}{13} = 3$$

Cálculo Integral. Nombre:

Unidad Dos. Integración por partes y fracciones parciales

$$\int 18x^8 \ln[x] dx$$

$$\int 32x^2 e^{4x} dx$$

$$\int e^{5x} \cos[5x] dx$$

$$\int \frac{x+9}{2x^2-18} dx$$

$$\int \frac{10+10x+3x^2}{x^3+6x^2+12x+8} dx$$

$$\int \frac{16-2x+x^2}{x^3+16x} dx$$