

## Partial fractions (integration of rational functions)

- $\int \frac{2x-1}{(x-1)(x-2)} dx$
- $\int \frac{5x-3}{x^2-5x+6} dx$
- $\int \frac{x+1}{x^2+6x+9} dx$
- $\int \frac{1}{(x-1)^2(x-2)} dx$
- $\int \frac{1}{x(x^2+1)} dx$
- $\int \frac{3x-2}{x(x^2+1)} dx$
- $\int \frac{1}{x^2+9} dx$
- $\int \frac{1}{4x^2+4x+2} dx$
- $\int \frac{3x-1}{x+2} dx$
- $\int \frac{27x^3}{3x+1} dx$
- $\int \frac{x^4}{x^2-3} dx$
- $\int \frac{x^3}{x^2+3x+2} dx$

## Integration of trigonometric functions and their powers

- $\int \cos^2 2x dx$
- $\int \sin^2 x \cos^2 x dx$
- $\int \frac{\cos^3 x}{\sin^4 x} dx$
- $\int \frac{\tan^3 x}{\cos^2 x} dx$
- $\int \cos^3 x \sin^3 x dx$

## Substitution (II)

- $\int \frac{1}{1+\sqrt{x+1}} dx$
- $\int \frac{3x}{\sqrt{2x+1}} dx$
- $\int \frac{1}{(2+x)\sqrt{1+x}} dx$
- $\int \frac{\sqrt{x-1}}{x+2} dx$

## Some results

- $[1/3 \arctan(x/3) + C]$
- $[1/2 \arctan(2x+1) + C]$
- $[\frac{x^3}{3} + 3x + \frac{3\sqrt{3}}{2} \ln \frac{|x-\sqrt{3}|}{|x+\sqrt{3}|} + C]$
- $[\frac{x^2}{2} - 3x - \ln|x+1| + 8 \ln|x+2| + C]$