

PARTIAL FRACTION DECOMPOSITION

Examples: Compute the following indefinite integrals:

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

$$2. \int \frac{x}{(x+2)^2(x-1)} dx$$

$$3. \int \frac{x+1}{x(x^2+9)} dx$$

TRIGONOMETRIC SUBSTITUTION

Examples:

1. Find $\int \sqrt{1 - x^2} dx$ using the substitution $x = \sin \theta$

2. Which substitutions would help to integrate $\int \frac{1}{\sqrt{9 - x^2}} dx$?
Do the substitution.

3. Complete the square and use a sine or tangent substitution to compute $\int \frac{1}{x^2 + 2x + 5} dx$.