

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

Example (2). Find $\int \frac{2x + 3}{x^2 + 4x + 4} dx$

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

Example (4). Find $\int \frac{3x - 7}{x^2 + 4} dx$

Example 1. Find $\int \frac{1}{x^2 - a^2} dx$

Example 2. Find $\int \frac{4x + 3}{2x^2 + 3x - 2} dx$

Example (a) Try to find the partial fraction decomposition for $\frac{2x^3 - x^2 + 4}{x(x - 1)(x^2 + x + 1)(x^2 + 1)^3}$

Example (b) Find the partial fraction decomposition for $\frac{4 - 3x + x^2 + 2x^3}{x(x^2 + 1)^3}$

Example 3. Find $\int \frac{4x}{x^3 - x^2 - x + 1} dx = \int \frac{4x}{(x - 1)^2(x + 1)} dx$

Example 10 in §7.3: Find $\int \frac{A}{x^2 - 2x + 5} dx$

Example 4. Find $\int \frac{Bx}{x^2 - 2x + 5} dx$

Example 5. Find $\int \frac{2x^2 - x + 4}{x^3 + 4x} dx$

Example 6. Find $\int \frac{x - 1}{4x^2 - 4x + 3} dx$

Example 7. Find $\int \frac{x}{(x^2 + a^2)^n} dx$ for $n \geq 2$

Example 8 Simply $\int \frac{1}{(x^2 + a^2)^n} dx$ for $n \geq 2$ to a question in §7.2.

Example 9 Find the indefinite integral of the rational function in Example (b).

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