

1. The following integrals appear similar, but require different methods to evaluate. Find each indefinite integral:

(a) $\int \frac{1}{x^2 + 8x + 17} dx$

(c) $\int \frac{1}{x^2 + 8x + 15} dx$

(b) $\int \frac{1}{x^2 + 8x + 16} dx$

(d) $\int \frac{1}{(x^2 + 8x + 17)^2} dx$

2. Find each indefinite integral:

(a) $\int \frac{x + 4}{x^2 + 8x + 25} dx$

(c) $\int \frac{3x^2 - 18x + 35}{x^2 - 6x + 10} dx$

(b) $\int \frac{2x - 1}{x^2 + 2x - 15} dx$

(d) $\int \frac{3x - 21}{x^2 + 8x + 25} dx$

3. Find the following indefinite integrals:

$$(a) \int \frac{1}{\sqrt{16 - 6x - x^2}} dx$$

$$(c) \int \frac{1}{(x^2 - 4x + 29)^{\frac{3}{2}}} dx$$

$$(b) \int \frac{1}{\sqrt{x^2 + 6x + 25}} dx$$

$$(d) \int \frac{2x}{(x^2 + 6x + 25)^2} dx$$

4. Use Substitution to find: $\int \frac{1}{\sqrt[3]{x} - \sqrt[5]{x}} dx$

5. Use long division and partial fractions to find: $\int \frac{x^5}{(x^2 + 4)^2} dx$