

Section 3.3 - Trigonometric Substitution

Evaluate the integrals.

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

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

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

(4) $\int \frac{x^2}{\sqrt{9-x^2}} dx$

(5) $\int \frac{\sqrt{x^2-1}}{x^4} dx$

(6) $\int_0^a \frac{dx}{(a^2+x^2)^{3/2}}, a > 0$

(7) $\int_2^3 \frac{dx}{(x^2-1)^{3/2}}$

(8) $\int_0^{1/2} x\sqrt{1-4x^2} dx$

(9) $\int \frac{\sqrt{x^2-9}}{x^3} dx$

(10) $\int_0^a x^2\sqrt{a^2-x^2} dx$

(11) $\int_0^3 \frac{x}{\sqrt{36-x^2}} dx$

(12) $\int \frac{dt}{t^2\sqrt{t^2-16}}$

(13) $\int_0^{2/3} \sqrt{4-9x^2} dx$

(14) $\int_0^2 \frac{dt}{\sqrt{4+t^2}}$

(15) $\int_0^1 \frac{dx}{(x^2+1)^2}$

(16) $\int_{\sqrt{2}/3}^{2/3} \frac{dx}{x^5\sqrt{9x^2-1}}$

(17) $\int \frac{x}{\sqrt{x^2-7}} dx$

(18) $\int \frac{dx}{[(ax)^2-b^2]^{3/2}}$

(19) $\int \frac{\sqrt{1+x^2}}{x} dx$

(20) $\int \frac{x}{\sqrt{1+x^2}} dx$

(21) $\int_0^1 \sqrt{x^2+1} dx$

(22) $\int_0^1 \sqrt{x-x^2} dx$

(23) $\int_0^{0.6} \frac{x^2}{\sqrt{9-25x^2}} dx$

(24) $\int \frac{dx}{\sqrt{x^2+2x+5}}$

(25) $\int x^2\sqrt{3+2x-x^2} dx$

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

(27) $\int \sqrt{x^2+2x} dx$

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

(29) $\int x\sqrt{1-x^4} dx$

(30) $\int_0^{\pi/2} \frac{\cos t}{\sqrt{1+\sin^2 t}} dt$