

1. Without solving the integral, find the appropriate change of variables and simplify the integral.

(a)  $\int (36 - 9x^2)^{5/2} dx$

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

(c)  $\int \sqrt{x^2 + 2x + 10} dx$

(d)  $\int (9 - 4t^2)^{3/2} dt$

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

(f)  $\int e^{4x} \sqrt{e^{8x} - 9} dx$

(g)  $\int \frac{z}{(1 - 4z - 2z^2)^{3/2}} dz$

(h)  $\int \frac{1}{\sqrt{9x^2 - 36x + 37}} dx$

(i)  $\int \sqrt{7w^2 - 1} dw$

(j)  $\int \cos(x) \sqrt{9 + 25 \sin^2(x)} dx$

(k)  $\int \frac{1}{\sqrt{10x - x^2}} dx$

2. Evaluate the integrals

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

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

(c)  $\int \frac{1}{\sqrt{9 - x^2}} dx$

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

(e)  $\int \frac{x^3}{\sqrt{16 - x^2}} dx$

(f)  $\int \frac{1}{x^2 \sqrt{25 - x^2}} dx$

(g)  $\int \frac{x^3}{\sqrt{64 + x^2}} dx$

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

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

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

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

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

(m)  $\int \frac{(1 - x^2)^{3/2}}{x^2} dx$

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

(o)  $\int \frac{1}{\sqrt{x^2 - 81}} dx$

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

(q)  $\int_0^5 \sqrt{10x - x^2} dx$