

Wait What's the Derivative?

Problem 1. For each of the following evaluate the given integral.

i. $\int 12v(7 + 6v^2)^9 dv$

vii. $\int (6w^{-4} + 12w^{-7}) \sqrt[4]{w^{-3} + w^{-6}} dw$

ii. $\int (4x^3 - 12x) (x^4 - 6x^2)^{-3} dx$

viii. $\int \cos(7t) dt$

iii. $\int (z^2 - 4) (12z - z^3)^4 dz$

ix. $\int (v - 2v^3) \cos(v^2 - v^4) dv$

iv. $\int 7z^2(14 + 8z^3)^{-5} dz$

x. $\int \sqrt{z} \sin(1 + \sqrt{z^3}) dz$

v. $\int 3(y^6 - 4y^{-3}) (y^7 + 14y^{-2} - 7)^6 dy$

xi. $\int \csc^2(1 + 2x) dx$

vi. $\int \left(\frac{1}{2}x^3 - 1\right) \sqrt{8x - x^4} dx$

xii. $\int 7w^{-5} \sec(w^{-4}) \tan(w^{-4}) dw$

$$\text{xiii. } \int (2 - t^2) e^{6t-t^3} dt$$

$$\text{xix. } \int [6v - 18 \sin(6v)] \sqrt[5]{v^2 + \cos(6v)} dv$$

$$\text{xiv. } \int 12z^{-2} e^{4+z^{-1}} dz$$

$$\text{xx. } \int (\cos(x) + \sin(x)) e^{\sin(x) - \cos(x)} dx$$

$$\text{xv. } \int \frac{1}{4 - 9w} dw$$

$$\text{xxi. } \int \frac{[\ln(w^2)]^4}{w} dw$$

$$\text{xvi. } \int \frac{9y}{y^2 + 3} dy$$

$$\text{xxii. } \int \cos(v) \cos(1 + \sin(v)) dv$$

$$\text{xvii. } \int \frac{6x^2 - 10x^4}{x^5 - x^3} dx$$

$$\text{xxiii. } \int \frac{y + \sin(2y)}{y^2 - \cos(2y)} dy$$

$$\text{xviii. } \int \frac{1}{t} \sin(1 - \ln(t)) dt$$

$$\text{xxiv. } \int \sec^7(t) \tan(t) dt$$

$$\text{xxv. } \int e^z \sec^2(e^z) [1 + \tan(e^z)]^{-3} dz$$

$$\text{xxviii. } \int \frac{1}{\sqrt{16 - y^2}} dy$$

$$\text{xxvi. } \int \frac{7}{1 + 5x^2} dx$$

$$\text{xxix. } \int \frac{3}{\sqrt{7 - 4v^2}} dv$$

$$\text{xxvii. } \int \frac{2}{3 + 4t^2} dt$$

$$\text{xxx. } \int \frac{x}{1 + x^4} dx$$