

Rules:

$$\int u^n du = \frac{u^{n+1}}{n+1} + C \quad (n \neq -1) ; \int u^{-1} du = \ln|u| + C$$

Determine:

$$(1) \int (2x+1)^3 dx ; (2) \int \frac{7 dx}{(1-4x)^{10}} ; (3) \int \frac{10 dx}{3x+4} ; (4) \int \frac{9x dx}{\sqrt{3x^2-1}}$$

$$(5) \int \frac{4x^2 dx}{(5x^3+7)^3} ; (6) \int 5 \sqrt{3x^2-7} x dx ; (7) \int \sqrt[5]{3x^2-7} x dx$$

$$(8) \int \frac{x^2+2}{2x^3+12x+7} dx ; (9) \int \frac{e^x}{e^x+3} dx ; (10) \int (e^{x^2+7})^5 x e^{x^2} dx$$

$$(11) \int \frac{x^3 dx}{6x^4-5} ; (12) \int \frac{x^3 dx}{\sqrt{(6x^4-5)^3}} ; (13) \int (5x^2+2x+7)^{100} (5x+1) dx$$

$$(14) \int \left(\sqrt{2x+1} + \sqrt[3]{5x-2} \right) dx ; (15) \int \left[(9x-1)^4 - (x^2-8)^3 x \right] dx$$

$$(16) \int 7 \left(\frac{4}{x} + 5 \right)^{10} \frac{dx}{x^2} ; (17) \int \frac{\cos x dx}{5 \sin x + 3}$$

$$(18) \int \frac{\sin x dx}{(\tan^2 x - 5) \cos^3 x}$$

Answers:

$$(1) \frac{1}{8} (2x+1)^4 + C ; (2) \frac{7}{36 (1-4x)^9} + C ; (3) \frac{10}{3} \ln|3x+4| + C$$

$$(4) 3 \sqrt{3x^2-1} + C ; (5) \frac{-2}{15 (5x^3+7)^2} + C ; (6) \frac{5}{9} (3x^2-7)^{3/2} + C$$

$$(7) \frac{5}{36} (3x^2-7)^{6/5} + C ; (8) \frac{1}{6} \ln|2x^3+12x+7| + C ; (9) \ln (e^x+3) + C$$

$$(10) \frac{1}{12} (e^{x^2+7})^6 + C ; (11) \frac{1}{24} \ln|6x^4-5| + C ; (12) \frac{-1}{12 \sqrt{6x^4-5}} + C$$

$$(13) \frac{1}{202} (5x^2+2x+7)^{101} + C ; (14) \frac{1}{3} (2x+1)^{3/2} + \frac{3}{20} (5x-2)^{4/3} + C$$

$$(15) \frac{1}{45} (9x-1)^5 - \frac{1}{8} (x^2-8)^4 + C ; (16) -\frac{7}{44} \left(\frac{4}{x} + 5 \right)^{11} + C$$

$$(17) \frac{1}{5} \ln |5 \sin x + 3| + C ; (18) \frac{1}{2} \ln |\tan^2 x - 5| + C$$