

IF $U = \frac{1}{2}(\text{LOOP})^2$, THEN $DU = (?)$.

Choose a function to substitute for u.

1) $\int 2x(x^2 + 1)^5 dx$	2) $\int \frac{2x}{x^2 + 1} dx$	3) $\int 2x\sqrt{x^2 + 1} dx$	4) $\int 3x^2(x^3 + 1)^5 dx$
5) $\int \sin^3(x) \cos(x) dx$	6) $\int \frac{\cos(x)}{\sin(x)} dx$	7) $-\int \sin(x)e^{\cos(x)} dx$	8) $-\int \frac{\sin(x)}{\cos^2(x)} dx$
9) $\int \tan^3(x) \sec^2(x) dx$		10) $\int \cos(x)\sqrt{1 + \sin(x)} dx$	

Let $u = (?)$.

A. $u = \sin^3(x)$	D. $u = 1 + \sin(x)$	L. $u = \cos(x)$	M. $u = x^2$	O. $u = x^2 + 1$
P. $u = \sin(x)$	R. $u = \tan^3(x)$	S. $u = e^x$	(. $u = \tan(x)$). $u = x^3 + 1$

L	O	O	P	D	(L	O	O	P)
8	1	1	6	10	9	7	2	3	5	4

WHAT POLITICAL MOVEMENT AIMS TO PREVENT THE TEACHING OF CALCULUS IN HIGH SCHOOLS?

For the indefinite integrals 1) - 10) above, 1a) - 10a) $du = (?)$.

A. $du = 3x^2 dx$	B. $du = \tan(x) dx$	E. $du = 2x dx$	I. $du = -\sin(x) dx$
K. $du = \sec(x) dx$	M. $du = \sec^2(x) dx$	P. $du = \sin(x) dx$	R. $du = \tan^3(x) dx$
S. $du = e^x dx$	T. $du = \cos(x) dx$	U. $du = -\cos(x) dx$	V. $du = (x^3 + 1) dx$

For the indefinite integrals 1) - 10) above, 1b) - 10b) give the indefinite integral.

A. $\frac{1}{6}(x^2 + 1)^6 + k$	D. $\frac{1}{6}(x^3 + 1)^6 + k$	E. $\frac{2}{3}(x^2 + 1)^{3/2} + k$	H. $\frac{1}{4}\sin^4(x) + k$
M. $\frac{1}{4}\tan^4(x) + k$	N. $-\sec(x) + k$	O. $e^{\cos(x)} + k$	P. $\sec(x) + k$
P. $\sec^3(x) + k$	R. $\frac{2}{9}(\sin x + 1)^{3/2} + k$	T. $\ln(x^2 + 1) + k$	V. $\ln \sin(x) + k$

T	H	E	A	N	T	I	-	D	E	R	I	V	A	T	I	V	E
5a	5b	1a	4a	8b	10a	7a	4b	3a	10b	8a	6b	1b	2b	8a	6b	1a	

M	O	V	E	M	E	N	T
9a	7b	6b	2a	9b	3b	8b	6a

Integration Practice Worksheet

1)

$$\int \sec^2 x \tan x dx$$

$$\frac{1}{2} \tan^2 x + C$$

2)

$$\int (x^2 + 1) \sqrt{1 + 3x + x^3} dx$$

$$\frac{2}{9} (1 + 3x + x^3)^{3/2} + C$$

3)

$$\int \frac{x^2}{\sqrt{5+x^3}} dx$$

$$\frac{2}{3} \sqrt{(5+x^3)} + C$$

4)

$$\int x \cos(x^2) \sin^3(x^2) dx$$

$$\frac{1}{8} \sin^4(x^2) + C$$

5)

$$\int_1^4 \frac{e^{\sqrt{t}}}{\sqrt{t}} dt$$

$$2e^2 - 2e$$

6)

$$\int_0^{\pi/2} \sin^5 t \cos t dt$$

$$\frac{1}{6}$$

7)

$$\int \sec 2\theta \tan 2\theta \cdot d\theta$$

$$\frac{1}{2} \sec(2\theta) + C$$

8)

$$\int \cos^4 \theta \sin \theta \cdot d\theta$$

$$-\frac{1}{5} \cos^5 \theta + C$$