IF $U = \frac{1}{2}(LOOP)^2$, 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
8	1	1	6

D	(	L	O	O	P	)
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. $du = 3x^2dx$	B. $du = \tan(x)dx$	E. $du = 2xdx$	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. $\frac{2}{3}(\sin x + 1)^{3/2} + k$	T. $\ln(x^2+1) + k$	V. $\ln\lvert\sin(x)\rvert + k$

T	H	E
5a	5b	1a

A	N	T	I
4a	8b	10a	7a

-

D	E	R	I	V	A	T	I	V	E
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

AP Calculus AB
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) $\int \sec 2\theta \tan 2\theta \ d\theta$ $\frac{1}{2}\sec(2\theta) + C$	8) $\int \cos^4\theta \sin\theta \ d\theta$ $-\frac{1}{5}\cos^5\theta + C$