AP Calculus AB

"Most Complicated" Rule #2

1) $\int (4-3s)^{1/2}\,ds$

$\boxed{-\frac{2}{9}(4-3s)^{3/2}+C}$

check:

$\frac{3}{2}(4-3s)^{1/2}(-3)$

2) $\int (9t-8)^{-1/2}\,dt$

$\boxed{\frac{2}{9}(9t-8)^{1/2}+C}$

check:

$\frac{1}{2}(9t-8)^{-1/2}\cdot 9$

3) $\int x\,(9+x^2)^{1/9}\,dx$

$\boxed{\frac{9}{20}(9+x^2)^{10/9}+C}$

check:

$\frac{10}{9}(9+x^2)^{1/9}\cdot 2x$

4) $\int \cos(8z-9)\,dz$

$\boxed{\frac{1}{8}\sin(8z-9)+C}$

check:

$\cos(8z-9)\cdot 8$

5) $\int 2x(x^2+6)^3\,dx$

$\boxed{\frac{1}{4}(x^2+6)^4+C}$

check:

$4(x^2+6)^3\cdot 2x$

6) $\int x^2 e^{x^3}\,dx$

$\boxed{\frac{1}{3}e^{x^3}+C}$

check:

$e^{x^3}\cdot 3x^2$

7) $\int 3x^4(1-12x^5)^{-1/2}\,dx$

$\boxed{-\frac{1}{10}(1-12x^5)^{1/2}+C}$

check:

$\frac{1}{2}(1-12x^5)^{-1/2}(-60x^4)$

$-30\square = 3$

$\square = -\frac{1}{10}$

8) $\int (x^2+x)^{12}(2x+1)\,dx$

$\boxed{\frac{1}{13}(x^2+x)^{13}+C}$

check:

$13(x^2+x)^{12}(2x+1)$

9) $\int \frac{dx}{2x+1} = \int (2x+1)^{-1}\,dx$

$\boxed{\frac{1}{2}\ln|2x+1|+C}$

check:

$\frac{2}{2x+1}$

10) $\int \frac{e^{5x}}{e^{5x}+9}\,dx$

$\int e^{5x}(e^{5x}+9)^{-1}\,dx$

$\boxed{\frac{1}{5}\ln|e^{5x}+9|+C}$

check

$\frac{e^{5x}\cdot 5}{e^{5x}+9}$

11) $\int \sec^2(6x+1)\,dx$

$\boxed{\frac{1}{6}\tan(6x+1)+C}$

check:

$\sec^2(6x+1)\cdot 6$

12) $\int \frac{x^7}{(9-x^8)^2}\,dx$

$\int x^7(9-x^8)^{-2}\,dx$

$\boxed{\frac{1}{8}(9-x^8)^{-1}+C}$

check:

$-1(9-x^8)^{-2}\cdot(-8x^7)$

13) $\int(3x^4-4x^{-5}+\sec^2 x)\,dx$

$\boxed{\frac{3}{5}x^5+x^{-4}+\tan x+C}$