Integrals quasiimmediates

1) $\int 4\ \sin\left(4\ x\right)dx =$

2) $\int \sin\left(6\ x\right)dx =$

3) $\int \sin\left(3\ x+1\right)dx =$

4) $\int x\ \sin\left(7\ x^2+5\right)dx =$

5) $\int e^x\ \sin\left(e^x-6\right)dx =$

6) $\int x\ e^{8x^2-8}dx =$

7) $\int e^{-3x+8}dx =$

8) $\int 6^{2x-6}dx =$

9) $\int 151\ e^{\frac{x}{9}}dx =$

10) $\int \frac{5}{-7\ x+7}dx =$

11) $\int x\ \cos\left(9\ x^2+2\right)dx =$

12) $\int \frac{5}{\cos^2\left(-7\ x+7\right)}dx =$

13) $\int 4\ \sin\left(x\right)\ \cos\left(x\right)dx =$

14) $\int x\ 9^{8x^2+2}dx =$

15) $\int 5\ \sin^2\left(x\right)\ \cos\left(x\right)dx =$

16) $\int 4\ \sin\left(x\right)\ \cos^2\left(x\right)dx =$

Integrals quasiimmediates

$$1) \int 4 \, \sin(4\,x)\,dx = -\cos(4\,x) \; + \; C$$

$$\left.\begin{array}{l} f(x) = 4\,x \\ f'(x) = 4 \end{array}\right\} \Rightarrow \int sin(f(x)) \, . \, f'(x)dx = -cos f(x) + C$$

$$2) \int \sin(6\,x)\,dx = \frac{1}{6}\int 6 \, . \sin(6\,x)\,dx = \frac{-\cos(6\,x)}{6} \; + \; C$$

$$\left.\begin{array}{l} f(x) = 6\,x \\ f'(x) = 6 \end{array}\right\} \Rightarrow \int sin(f(x)) \, . \, f'(x)dx = -cos f(x) + C$$

$$3) \int \sin(3\,x+1)\,dx = \frac{1}{3}\int 3 \, . \sin(3\,x+1)\,dx = \frac{-\cos(3\,x+1)}{3} \; + \; C$$

$$\left.\begin{array}{l} f(x) = 3\,x+1 \\ f'(x) = 3 \end{array}\right\} \Rightarrow \int sin(f(x)) \, . \, f'(x)dx = -cos f(x) + C$$

$$4) \int x \, \sin\left(7\,x^2+5\right)dx = \frac{1}{14}\int 14 \, . \, x \, \sin\left(7\,x^2+5\right)dx = \frac{-\cos\left(7\,x^2+5\right)}{14} \; + \; C$$

$$\left.\begin{array}{l} f(x) = 7\,x^2+5 \\ f'(x) = 14\,x \end{array}\right\} \Rightarrow \int sin(f(x)) \, . \, f'(x)dx = -cos f(x) + C$$

$$5) \int e^x \, \sin(e^x-6)\,dx = -\cos(e^x-6) \; + \; C$$

$$\left.\begin{array}{l} f(x) = e^x - 6 \\ f'(x) = e^x \end{array}\right\} \Rightarrow \int sin(f(x)) \, . \, f'(x)dx = -cos f(x) + C$$

$$6) \int x \, e^{8x^2-8}dx = \frac{1}{16}\int 16 \, . \, x \, e^{8x^2-8}dx = \frac{1}{16}e^{8x^2-8} \; + \; C$$

$$\left.\begin{array}{l} f(x) = 8\,x^2-8 \\ f'(x) = 16\,x \end{array}\right\} \Rightarrow \int e^{f(x)} \, . \, f'(x)dx = e^{f(x)} + C$$

$$7) \int e^{-3x+8}dx = \frac{-1}{3}\int -3 \, . \, e^{-3x+8}dx = \frac{-1}{3}e^{-3x+8} \; + \; C$$

$$\left.\begin{array}{l} f(x) = -3\,x+8 \\ f'(x) = -3 \end{array}\right\} \Rightarrow \int e^{f(x)} \, . \, f'(x)dx = e^{f(x)} + C$$

$$8) \int 6^{2x-6}dx = \frac{1}{2}\int 2 \, . \, 6^{2x-6}dx = \frac{1}{2ln6}6^{2x-6} \; + \; C$$

$$\left.\begin{array}{l} f(x) = 2\,x-6 \\ f'(x) = 2 \end{array}\right\} \Rightarrow \int a^{f(x)} \, . \, f'(x)dx = a^{f(x)} \, . \, \frac{1}{lna} + C$$

Integrals quasiimmediates

$$9)\int 151\ e^{\frac{x}{9}}dx = 151\,.\,9\int \frac{1}{9}\,.\,e^{\frac{x}{9}}dx = 1359e^{\frac{x}{9}}\ +\ C$$

$$\left.\begin{array}{l} f(x)=\frac{x}{9} \\ f'(x)=\frac{1}{9} \end{array}\right\} \Rightarrow \int e^{f(x)}\,.\,f'(x)dx = e^{f(x)}+C$$

$$10)\int \frac{5}{-7\ x+7}dx = 5\,.\,\frac{-1}{7}\int \frac{-7}{-7\ x+7}dx = \frac{-5}{7}ln\left|-7\ x+7\right|\ +\ C$$

$$\left.\begin{array}{l} f(x)=-7\ x+7 \\ f'(x)=-7 \end{array}\right\} \Rightarrow \int \frac{1}{f(x)}\,.\,f'(x)dx = ln|f(x)|+C$$

$$11)\int x\ \cos\left(9\ x^2+2\right)dx = \frac{1}{18}\int 18\,.\,x\ \cos\left(9\ x^2+2\right)dx = \frac{\sin\left(9\ x^2+2\right)}{18}\ +\ C$$

$$\left.\begin{array}{l} f(x)=9\ x^2+2 \\ f'(x)=18\ x \end{array}\right\} \Rightarrow \int cos(f(x))\,.\,f'(x)dx = sin f(x)+C$$

$$12)\int \frac{5}{\cos^2\left(-7\ x+7\right)}dx = 5\,.\,\frac{-1}{7}\int \frac{-7}{cos^2(-7\ x+7)}dx = \frac{-5}{7}tg\left(-7\ x+7\right)\ +\ C$$

$$\left.\begin{array}{l} f(x)=-7\ x+7 \\ f'(x)=-7 \end{array}\right\} \Rightarrow \int \frac{1}{(f(x))^2}\,.\,f'(x)dx = tg(f(x))+C$$

$$13)\int 4\ \sin(x)\ \cos(x)\,dx = 4\int sin(x)cos(x)dx = 2sin^2x\ +\ C$$

$$\left.\begin{array}{l} f(x)=\sin(x) \\ f'(x)=\cos(x) \end{array}\right\} \Rightarrow \int (f(x))^n\,.\,f'(x)dx = \frac{(f(x))^{n+1}}{n+1}+C$$

$$14)\int x\ 9^{8x^2+2}dx = \frac{1}{16}\int 16\,.\,x\ 9^{8x^2+2}dx = \frac{1}{16ln9}9^{8x^2+2}\ +\ C$$

$$\left.\begin{array}{l} f(x)=8\ x^2+2 \\ f'(x)=16\ x \end{array}\right\} \Rightarrow \int a^{f(x)}\,.\,f'(x)dx = a^{f(x)}\,.\,\frac{1}{lna}+C$$

$$15)\int 5\ \sin^2(x)\ \cos(x)\,dx = 5\int sin(x)^2cos(x)dx = \frac{5}{3}sin^3x\ +\ C$$

$$\left.\begin{array}{l} f(x)=\sin(x) \\ f'(x)=\cos(x) \end{array}\right\} \Rightarrow \int (f(x))^n\,.\,f'(x)dx = \frac{(f(x))^{n+1}}{n+1}+C$$

$$16)\int 4\ \sin(x)\ \cos^2(x)\,dx = 4\int sin(x)cos(x)^2dx = \frac{-4}{3}cos^3x\ +\ C$$

$$\left.\begin{array}{l} f(x)=\cos(x) \\ f'(x)=-\sin(x) \end{array}\right\} \Rightarrow \int (f(x))^n\,.\,f'(x)dx = \frac{(f(x))^{n+1}}{n+1}+C$$