Calculus Assignment # 9

Evaluate each of the following integrals please.

(1) $\int 2x \sin(3x)\, dx$

(2) $\int x \ln(x)\, dx$

(3) $\int \ln(3x + 1)\, dx$

(4) $\int \sin^{-1}(x)\, dx$

(5) $\int x \sec^2(x)\, dx$

(6) $\int x^2 e^x\, dx$

(7) $\int \sec^{-1}(\sqrt{x})\, dx$

(8) $\int x \sqrt{1 - x}\, dx$

(9) $\int e^{2x} \cos(3x)\, dx$

(10) $\int \sin(\ln(x))\, dx$

(11) $\int x (\ln(x))^2\, dx$

(12) $\int \sec^3(x)\, dx$

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Answers

(1) $-\frac{2}{3}x\cos(3x) + \frac{2}{9}\sin(3x) + C$

(2) $\frac{1}{2}x^2\ln(x) - \frac{1}{4}x^2 + C$

(3) $x\ln(3x+1) + \frac{1}{3}\ln(3x+1) - x + C$

(4) $x\sin^{-1}(x) + \sqrt{1-x^2} + C$

(5) $x\tan(x) + \ln\left|\cos(x)\right| + C$

(6) $x^2e^x - 2xe^x + 2e^x + C$

(7) $x\sec^{-1}\sqrt{(x)} - \sqrt{x-1} + C$

(8) $-\frac{2}{3}(1-x)^{\frac{3}{2}} + \frac{2}{5}(1-x)^{\frac{5}{2}} + C$

(9) $\frac{3}{13}e^{2x}\sin(3x) + \frac{2}{13}e^{2x}\cos(3x) + C$

(10) $\frac{1}{2}x\sin(\ln(x)) - \frac{1}{2}x\cos(\ln(x)) + C$

(11) $\frac{1}{2}x^2(\ln x)^2 - \frac{1}{2}x^2(\ln x) + \frac{1}{4}x^2 + C$

(12) $\frac{1}{2}\sec(x)\tan(x) + \frac{1}{2}\ln\left|\sec(x)+\tan(x)\right| + C$