89 +8

97

excellent!!

Prepa Tec
Calculus II

Campus Cumbres
2^{st} **partial Quiz # 2A**

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I. Solve the following integrals. SHOW THE STEPS OF YOUR PROCEDURE. (20 points each)

1. $\int 3sin^3(x)dx$

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

$3\int \sin(x)(1-\cos^2(x))dx$

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

$u=x \quad du=1 \qquad u=\cos(x) \quad du=-\sin(x)$

$3(-\cos(x)+1\cos^3(x)/3+C$

$-3\cos(x)+\frac{3\cos^3(x)}{3}+C$

$-3\cos(x)+\cos^3(x)+C$

20

$-3\cos(x)+\cos^3(x)+C$

2. $\int x^5cos^3(2x^6)dx$

$x^5\int \cos(2x^6)\cos^2(2x^6)dx$

$x^5\int \cos(2x^6)(1-\sin^2(2x^6))dx$

$x^5\int \cos(2x^6)-\cos(2x^6)\sin^2(2x^6)$

$u=2x^6 \quad du=12x^5 \qquad u=\sin(2x^6) \quad du=12x^5\cos(2x^6)$

$1\left(\frac{1}{12}\sin(2x^6)-\left(\frac{1}{12}\right)\frac{\sin^3(2x^6)}{3}\right)+C$

$\frac{1}{12}\sin(2x^6)-\frac{1}{12}\frac{\sin^3(2x^6)}{3}+C$

$\frac{1}{12}\sin(2x^6)-\frac{1}{12}\frac{\sin^3(2x^6)}{3}+C$

17

CORRECTION

$x^5\int \cos(2x^6)\cos^2(2x^6)dx$

$x^5\int \cos(2x^6)(1-\sin^2(2x^6))dx$

$x^5\int \cos(2x^6)-\cos(2x^6)\sin^2(2x^6)$

$u=2x^6 \quad du=12x^5 \qquad u=\sin(2x^6) \quad du=12x^5\cos(2x^6)$

$1\left(\frac{1}{12}\sin(2x^6)-\frac{1}{12}\frac{\sin^3(2x^6)}{3}\right)$

$\frac{1}{12}\sin(2x^6)-\frac{\sin^3(2x^6)}{36}+C$

3. $\int \frac{1}{2}x^3tan^3(x^4)dx$

$\frac{1}{2}x^3\int \tan(x^4)(\tan^2(x^4))dx$

$\frac{1}{2}x^3\int \tan(x^4)(\sec^2(x^4)-1)dx$

$\frac{1}{2}x^3\int -\tan(x^4)+\tan(x^4)\sec^2(x^4)$

$u=x^4 \quad du=4x^3 \qquad u=\sec(x^4) \quad du=4x^3\sec(x^4)\tan(x^4)$

$v=\tan(x^4) \qquad du=4x^3\sec^2(x^4)$

$\frac{1}{2}\left(\frac{1}{4}\ln|\cos(x^4)|+\frac{1}{4}\frac{\sec^3(x^4)}{3}\right)$

$\frac{1}{8}\ln|\cos(x^4)|+\frac{\sec^3(x^4)}{24}+C$

12

$\frac{1}{8}\ln|\cos(x^4)|+\frac{\sec^3(x^4)}{24}+C$

$\frac{1}{4}\frac{\tan^2(x^4)}{2}$

CORRECTION

$u=x^4 \quad du=4x^3 \qquad u=\tan(x^4) \quad du=4x^3\sec^2(x^4)$

$\frac{1}{2}\left(\frac{1}{4}\ln|\cos(x^4)|+\frac{1}{4}\frac{\tan^2(x^4)}{2}\right)$

$\frac{1}{8}\ln|\cos(x^4)|+\frac{\tan^2(x^4)}{8}+C$

④ $\int x^4 \sin^2(x^5)\,dx$

$\frac{1}{2}\int (x^4 - \cos(2x^5))\,dx$

$u = 2x^5 \quad du = 10x^4$

$\frac{1}{2}\left(\frac{x^5}{5} - \frac{1}{10}\sin(2x^5)\right) + C$

$\frac{x^5}{10} - \frac{1}{20}\sin(2x^5) + C$

$\frac{x^5}{10} - \frac{1}{20}\sin(2x^5) + C$

20

⑤ $\int \cot^2(8x)\,dx$

$\int (\csc^2(8x) - 1)\,dx$

$-\frac{1}{8}\cot(8x) - x + C$

$-\frac{1}{8}\cot(8x) - x + C$

20

BONUS

$\int \sin^5(4x)\,dx$

$\int \sin(4x)\sin^2(4x)\sin^2(4x)$

$\int \sin(4x)(1-\cos^2(4x))^2$

$\int \sin(4x)(1 - 2\cos^2(4x) + \cos^4(4x))$

$\int \sin(4x) - 2\sin(4x)\cos^2(4x) + \sin(4x)\cos^4(4x)$

$u=4x \quad du=4 \qquad u=\cos(4x) \quad du=-4\sin(4x) \qquad u=\cos(4x) \quad du=-4\sin(4x)$

$-\frac{1}{4}\cos(4x) + \frac{1}{2}\frac{\cos^3(4x)}{3} - \frac{1}{4}\frac{\cos^5(4x)}{5} + C$

$-\frac{1}{4}\cos(4x) + \frac{\cos^3(4x)}{6} - \frac{\cos^5(4x)}{20} + C$

$-\frac{1}{4}\cos(4x) + \frac{\cos^3(4x)}{6} - \frac{\cos^5(4x)}{20} + C$

+8