Prepa Tec
Calculus II

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

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100
excellent!!

I. Solve the following integrals. SHOW THE STEPS OF YOUR PROCEDURE. (25 points each)

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

$\sin 2x \cdot \sin^2 2x$

$\sin 2x\,(1-\cos^2 2x)$

$\sin 2x - \sin 2x \cos^2 2x$

$u = 2x$, $du = 2$

$u = \cos 2x$, $du = -2\sin$

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

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

2. $\int x^6 \cos^2(x^7)\,dx$

$x^6\left(\frac{1}{2}+\frac{1}{2}\cos(2x^7)\right)$

$u = 2x^7$, $du = 14x^6$

$\frac{x^6}{2} + \frac{x^6}{2}\cos(2x^7)$

$\frac{x^7}{14} + \frac{1}{28}\sin(2x^7) + C$

3. $\int 9x^4 \tan^3(x^5)\,dx$

$9x^4 \tan \tan^2$

$9x^4 \tan(x^5)\left(\sec^2(x^5)-1\right)$

$9x^4\tan(x^5)\sec^2(x^5) - 9x^4\tan(x^5)$

$u = \tan(x^5)$, $du = 5x^4\sec^2(x^5)$

$u = x^5$, $du = 5x^4$

$\frac{9}{5}\frac{\tan^2(x^5)}{2}$

$\frac{9}{10}\tan^2(x^5) + \frac{9}{5}\ln|\cos(x^5)| + C$

2- $v(t) = \frac{e^{3/t}}{9t^2}$

$\boxed{F(x) = -\frac{1}{27} e^{3/t} + C}$

$\frac{1}{9} e^{3t^{-1}} t^{-2}$

$-\frac{1}{27} e^{3/t} + C$ ✓

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$u = 3t^{-1}$

$du = -3t^{-2}$

$\frac{1}{9} \cdot -\frac{1}{3} e^{3/t}$

3- $\int \frac{x}{12} Cot(6x^2 - 1) Sin(6x^2 - 1) dx$

$\frac{x}{12} \frac{\cos}{\sin} \cdot \frac{\sin}{1}$

$\boxed{F(x) = \frac{1}{144} \sin(6x^2 - 1) + C}$

✓

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$\frac{x}{12} \cos(6x^2 - 1)$

$u = 6x^2 - 1$

$du = 12x$

$\frac{1}{144} \sin(6x^2 - 1)$

4- $\int 5 \sec(10x) \tan(10x) dx$

$5 \sec(10x) \tan(10x)$

$\boxed{F(x) = \frac{1}{2} \sec(10x) + C}$

$u = 10x$

$du = 10$

✓

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$\frac{1}{2} \sec(10x)$