CALCULUS II

QUIZ 2 A 3RD PARTIAL

100 excellent!! 73.5

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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (12.5 pts each one)

Evaluate the integral.

1) $\int -9x \cos 5x\, dx$ 1) A

$+ \quad -9x \quad \cos(5x)$
$- \quad -9 \quad \frac{1}{5}\sin(5x)$
$+ \quad 0 \quad -\frac{1}{25}\cos(5x)$

$-\frac{9x}{5}\sin(5x) - \frac{9}{25}\cos(5x) + C$

A) $-\frac{9}{25}\cos 5x - \frac{9}{5}x \sin 5x + C$ B) $-\frac{9}{25}\cos 5x - \frac{9}{5}x \sin 9x + C$

C) $-\frac{9}{25}\cos 5x - \frac{9}{5}\sin 5x + C$ D) $-\frac{9}{5}\cos 5x - 9x \sin 5x + C$

2) $\int 23x \sin x\, dx$ 2) C

$+ \quad 23x \quad \sin x$
$- \quad 23 \quad -\cos x$
$+ \quad 0 \quad -\sin x$

$-23x\cos x + 23\sin x + C$

A) $23 \sin x - 23 \cos x + C$ B) $23 \sin x + 23x \cos x + C$

C) $23 \sin x - 23x \cos x + C$ D) $23 \sin x - x \cos x + C$

3) $\int e^{5x} \cos 4x\, dx$ $\frac{1}{5}e^{5x}\cos(4x) - \int -\frac{4}{5}e^{5x}\sin(4x) =$ 3) C

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

$dv = e^{5x}$ $v = \frac{1}{5}e^{5x}$

A) $\frac{e^{5x}}{2}[\sin 4x + \cos 4x] + C$ B) $\frac{1}{41}[4 e^{5x} \sin 4x + 5 \cos 4x] + C$

C) $\frac{e^{5x}}{41}[4 \sin 4x + 5 \cos 4x] + C$ D) $\frac{e^{5x}}{41}[4 \sin 4x - 5 \cos 4x] + C$

$\frac{4}{5}x = 5$

$\frac{5}{1} - \frac{4}{5} = \frac{25}{4}$

$\frac{5}{1} - \frac{4}{25} = \frac{125}{4}$

$\sin(4x) \quad -\frac{1}{5}e^{5x}$
$4\cos(4x) \quad -\frac{4}{25}e^{5x}$
$-\frac{4}{125}e^{5x}$

4) $\int x^3 \cos 3x\, dx$ 4) C

$+ \quad x^3 \quad \cos(3x)$
$- \quad 3x^2 \quad \frac{1}{3}\sin(3x)$
$+ \quad 6x \quad -\frac{1}{9}\cos(3x)$
$- \quad 6 \quad -\frac{1}{27}\sin(3x)$
$+ \quad 0 \quad \frac{1}{81}\cos(3x)$

A) $\frac{1}{3}x^3 \sin 3x - \frac{1}{3}x^2 \cos 3x + \frac{2}{9}x \sin 3x + \frac{2}{27}\cos 3x + C$

B) $\frac{1}{3}x^3 \sin 3x + 1x^2 \cos 3x - 2x \sin 3x - 2 \cos 3x + C$

C) $\frac{1}{3}x^3 \sin 3x + \frac{1}{3}x^2 \cos 3x - \frac{2}{9}x \sin 3x - \frac{2}{27}\cos 3x + C$

D) $\frac{1}{3}x^3 \cos 3x + \frac{1}{3}x^2 \sin 3x - \frac{2}{9}x \cos 3x - \frac{2}{27}\sin 3x + C$

$\frac{x^3}{3}\sin(3x) + \frac{x^2}{3}\cos(3x) + \frac{2x}{9}\sin(3x) - \frac{2}{27}\cos(3x) + C$

5) $\int x^3 \ln 8x\, dx$ 5) A

A) $\frac{1}{4}x^4 \ln 8x - \frac{1}{16}x^4 + C$ B) $\ln 8x - \frac{1}{4}x^4 + C$

C) $\frac{1}{4}x^4 \ln 8x + \frac{1}{16}x^4 + C$ D) $\frac{1}{4}x^4 \ln 8x - \frac{1}{20}x^5 + C$

$u = \ln|8x|$ $du = 1/x$ $uv - \int v\,du$

$dv = x^3$ $v = x^4/4$

$\ln|8x|\left(\frac{x^4}{4}\right) - \int\left(\frac{x^4}{4}\right)\left(\frac{1}{x}\right) = \ln|8x|\left(\frac{x^4}{4}\right) - \int\frac{x^4}{4x} = \ln|8x|\left(\frac{x^4}{4}\right) - \frac{x^4}{16} + C$

$\int\left(\frac{x^3}{4}\right)$

$u = \ln|x| \quad du = 1/x$

$dv = 6x \quad v = 3x^2$

$\ln|x|(3x^2) - \int (\frac{1}{x})(3x^2) = \int \frac{3x^2}{x} = \int 3x = 3x^2\ln|x| - \frac{3x^2}{2} + C$

$[3(4)^2 \ln|4| - \frac{3(4)^2}{2}] - [3(2)^2 \ln|2| - \frac{3(2)^2}{2}]$

$42.542 - 2.317 = 40.225$

6) $\int_2^4 6x \ln x \, dx$ 6) A

A) 40.2 B) 6.70 C) 55.2 D) 9.48

7) $\int (3x + 2) e^{-4x} \, dx$ 7) A

A) $-\frac{3}{4}x e^{-4x} - \frac{11}{16}e^{-4x} + C$ B) $-\frac{3}{4} x e^{-4x} - e^{-4x} + C$

C) $-12x e^{-4x} - 56 e^{-4x} + C$ D) $\frac{3}{4}x e^{-4x} + \frac{11}{16}e^{-4x} + C$

8) $\int y^3 e^{-2y} \, dy$ 8) B

A) $e^{-2y}\left[\frac{1}{2}y^3 - \frac{3}{4}y^2 + \frac{3}{4}y - \frac{3}{8}\right] + C$ B) $-e^{-2y}\left[\frac{1}{2}y^3 + \frac{3}{4}y^2 + \frac{3}{4}y + \frac{3}{8}\right] + C$

C) $-\frac{1}{8}y^4 e^{-2y} + C$ D) $-\frac{1}{2}e^{-2y}\left[y^3 + y^2 + y + 6\right] + C$

7 $u = (3x+2) \quad du = 3$

$dv = e^{-4x} \quad v = -\frac{1}{4}e^{-4x}$

$(3x+2)(-\frac{1}{4}e^{-4x}) - \int(-\frac{1}{4}e^{-4x})(3) = \int -\frac{3}{4}e^{-4x} = \frac{3}{16}e^{-4x} = -\frac{3}{4}xe^{-4x} - \frac{1}{2}e^{-4x} - \frac{3}{16}e^{-4x} = -\frac{3}{4}xe^{-4x} - \frac{11}{16}e^{-4x} + C$

$-\frac{3}{4}x = -a \quad y = a + \frac{3}{a} = \frac{16}{3}$ $(-\frac{8}{16} - \frac{3}{16} = \frac{11}{16})$

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+	y^3	e^{-2y}
−	$3y^2$	$-\frac{1}{2}e^{-2y}$
+	$6y$	$\frac{1}{4}e^{-2y}$
−	6	$-\frac{1}{8}e^{-2y}$
+	0	$\frac{1}{16}e^{-2y}$

$-e^{-2y}[\frac{y^3}{2} + \frac{3}{4}y^2 + \frac{3}{4}y + \frac{3}{8}] + C$