

Calculus II

Name: _____

Study Guide 16

Class: _____

Due Date: _____

Score: _____

No Work $\Leftrightarrow$ No Points

Use Pencil Only $\Leftrightarrow$ Be Neat & Organized

1. Use the formula $\int \frac{1}{u^2 + a^2} du = \frac{1}{a} \tan^{-1} \frac{u}{a} + C$ to evaluate

(a) (3 points) $\int \frac{1}{x^2 + 16} dx$

(a) _____

(b) (4 points) $\int \frac{1}{x^2 + 8x + 20} dx$

(b) _____

(c) (5 points) $\int \frac{x}{x^4 - 6x^2 + 10} dx$

(c) _____

2. Use the formula $\int \frac{1}{u^2 - a^2} du = \frac{1}{2a} \ln \left| \frac{u - a}{u + a} \right| + C$ to evaluate

(a) (3 points) $\int \frac{1}{x^2 - 25} dx$

(a) _____

(b) (4 points) $\int \frac{1}{x^2 - 4x + 3} dx$

(b) _____

(c) (4 points) $\int \frac{x^2}{x^6 + 10x^3 + 9} dx$

(c) _____

(d) (4 points) $\int \frac{1}{4x^2 - 12x + 8} dx$

(d) _____

3. Use the formula $\int \cos^n u \, du = \frac{1}{n} \cos^{n-1} u \sin u + \frac{n-1}{n} \int \cos^{n-2} u \, du + c$ to evaluate

(a) (3 points) $\int \cos^3 4x \, dx$

(a) _____

(b) (4 points) $\int x \cos^4 x^2 \, dx$

(b) _____

4. (4 points) Use the formula $\int \frac{1}{u\sqrt{u^2 - a^2}} \, du = \frac{1}{a} \sec^{-1} \frac{u}{a} + c$ to evaluate

$\int \frac{1}{x\sqrt{x^2 - 4}} \, dx.$

4. _____

5. Use the formula $\int \sin^n u \, du = -\frac{1}{n} \sin^{n-1} u \cos u + \frac{n-1}{n} \int \sin^{n-2} u \, du + c$ to evaluate

(a) (3 points) $\int \sin^3(x-1) \, dx$

(a) _____

(b) (4 points) $\int x^2 \sin^4 x^3 \, dx$

(b) _____

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6. (5 points) Use a formula from the table of integrals to evaluate $\int \frac{x^2}{\sqrt{8x-x^2}} \, dx$.

6. _____