

Calculus II

Name: _____

Study Guide 10

Class: _____

Due Date: _____

Score: _____

No Work $\Leftrightarrow$ No Points

Use Pencil Only $\Leftrightarrow$ Be Neat & Organized

1. (3 points) Solve the differential equation $\frac{dy}{dx} = 2xy^2$.

1. _____

2. (4 points) Solve the differential equation $\frac{dy}{dx} = \frac{3x^2}{4y - \cos y}$, $y(0) = 0$.

2. _____

3. (4 points) Solve the differential equation $\frac{dy}{dx} = 2x + 2xy^2$.

3. _____

4. (4 points) Find $\frac{d}{dx} \left[\ln \frac{\cos x}{\sqrt{4 - 3x^2}} \right]$.

4. _____

5. (4 points) Find $\frac{d}{dx} \left[\ln \frac{\sin x \cos x \tan^3 x}{\sqrt{x}} \right]$.

5. _____

6. (3 points) Given $y = Ae^{2x} + Be^{-2x}$, find $y'' + 2y' - 8y$ for any constants A and B .

6. _____

7. (4 points) Evaluate $\int [\ln(e^x) + \ln(e^{-x})] dx$.

7. _____

8. (4 points) Find the average value of $f(x) = \pi \tanh x$ over $[0, 1]$.

8. _____

9. (4 points) If $f(x) = \sinh^{-1} \frac{1}{x}$, find $f'(x)$.

9. _____

10. (4 points) Evaluate $\int_4^6 \frac{1}{\sqrt{x^2 - 9}} dx$.

10. _____

11. (4 points) Evaluate $\int_0^1 \frac{1}{\sqrt{16x^2 + 1}} dx$.

11. _____

12. (4 points) Evaluate $\int \frac{\cosh x}{\cosh^2 x - 1} dx$.

12. _____

13. (4 points) Evaluate $\int \coth x dx$.

13. _____