

Calc 4 (undergrad)

Name: _____ Class: _____

1. What is the fundamental theorem of calculus?
2. Explain the concept of a double integral.
3. What is the definition of a limit in calculus?
4. Solve the differential equation $y'' + 2y' + y = 0$.
5. What is the Maclaurin series representation of $\sin(x)$?
6. Prove the divergence theorem in vector calculus.
7. Find the absolute extrema of the function $f(x) = x^3 - 3x^2 + 2x$ on the interval $[0, 2]$.
8. What is the Laplace transform of $f(t) = t^2 + 3t - 2$?
9. Prove the convergence of the series $(n=1 \text{ to } \infty)$ of $1/n$.

10. Consider the function $f(x) = x^3 - 3x^2 + 2x$. Determine all critical points and classify each as a local minimum, local maximum, or neither.

11. Define the concept of a partial derivative.

12. Solve the differential equation $y' + y = e^{-x}$.

13. What is the definition of a line integral?

Total Questions: 13

Final Grade: _____/13