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A DESCRIPTION OF THE ADVANCED PLACEMENT TEST

FOR CREDIT IN MATHEMATICS 1325

This is a two-hour and thirty minute multiple-choice test. There are fifty questions and you must answer at least thirty-seven correctly in order to pass. There is no penalty for wrong answers.

You may use a calculator.

The questions were chosen from the following topics.

Functions, graphs, limits, and continuity
Increments, tangent lines, and rates of change
The derivative
Differentiation of elementary functions
Marginal analysis on business and economics
First and second derivatives and graphs
Optimization; absolute maxima and minima
Curve sketching
The exponential and logarithmic functions
Continuous compound interest
Integration of elementary functions
Differential equations of growth and decay
Definite integrals and area
Functions defined in more than one dimension
Partial derivatives, maxima and minima

The following are some sample questions.

1. $\lim_{x \to 3} \frac{x^2 - 9}{x + 3}$ is:

   a. ∞
   b. 0
   c. 3
   d. Undefined
   e. None of the preceding

2. $\frac{d}{dx}(x \ln(x))$ is:

   a. ln (x)
   b. 1
   c. 1 + ln (x)
   d. x + ln (x)
   e. None of the preceding

3. Given the price-demand equation $x = f(p) = 100(10 - p)$, $0 \le p \le 10$, the demand is elastic when p is such that:

   a. $0 \le p \le 10$
   b. $p = 5$ only
   c. $5 < p < 10$
   d. $0 < p < 5$
   3. None of the preceding

4. $\int_2^3 x(x^2 + 1)\,dx$ is:

   a. 300
   b. 75
   c. 37.5
   d. 18.75
   e. None of the preceding

5. Let $f(x, y) = (x - 1)^2 - y^2$. Then f has a saddle point at:

   a. (1, 0)
   b. (0, 1)
   c. (-1, 0)
   d. (0, -1)
   e. None of the preceding