MTH 121 — Fall — 2004

Essex County College — Division of Mathematics

Test # 3[1] — Created December 9, 2004

Name: _____

Signature: _____

Show all work *clearly* and in *order*, and box your final answers. Justify your answers algebraically whenever possible. You have at most 80 minutes to take this 100 point exam. No cellular phones allowed.

1. (10 points) — Find the equations of the tangent line to the curve at the given point.
2. (10 points) — Find $f'(x)$ by using the definition.
3. (10 points) — Find $f'(x)$.
4. (10 points) — Find Find $f'(x)$.
5. (10 points) — Find $\frac{\mathrm{d}y}{\mathrm{d}x}$ by implicit differentiation.
6. (10 points) — Set up an expression for a definite integral as a limit of sums. **Do not evlauate.**
7. (10 points) — Evaluate a definite integral.
8. (10 points) — Evaluate a definite integral.
9. (10 points) — Evaluate a definite integral.
10. (10 points total) — Given:

$$f(x)$$
$$f'(x)$$
$$f''(x)$$

Answer the following questions where $f(x)$ is restricted to the interval $[a_1, a_2]$.

(a) (4 points) — range:
(b) (3 points) — global maximum(s):
(c) (3 points) — global minimum(s):

[1] This document was prepared by Ron Bannon using LaTeX.