

MATH 2850: TEST 03 (25 points.)

NAME: _____

DUE: Wednesday, February 7th, at the beginning of class.

DIRECTIONS: Show all work.

1. Consider the IVP: $\frac{dy}{dx} = 100 - y$, $y(0) = 50$.

(a) Use Picard's Theorem to show this IVP has a unique solution.

(b) Explain why the DE is **linear** and find an **explicit** solution to this IVP using an integrating factor.

2. Consider the IVP: $\frac{dy}{dx} = 100 - y$, $y(0) = 50$. (Yes, this is the same IVP as #1.)

Explain why the DE is **separable** and find an **explicit** solution by separating variables.

