

MATH 2850: TEST 04 (25 points.)

NAME: _____

DUE: Wednesday, February 14th, at the beginning of class.

DIRECTIONS: Show all work.

1. Consider the IVP: $y' = \frac{x-y}{x+y}$, $y(4) = 2$. (NOTE: This IVP may look familiar ...)

(a) Show the DE is exact.

(b) Find an implicit solution to the IVP using the method shown in class.

2. Consider the DE: $3xy \, dx + 2x^2 \, dy = 0$.

(a) Show this DE is **not** exact.

(b) Show that if this DE is multiplied by $\mu(x, y) = xy$, the resulting equation **is** exact.

(c) Find an **implicit** family of solutions to this DE.

