

MATH 213: EXAMINATION # 3

April 23, 2008

Instructions:

- (1) No outside sources other than MATLAB and Instructor.
- (2) Print your name on the line below

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- (3) Indicate your compliance with the honor system by writing out in full and signing the traditional pledge on the lines below

- (4) **Staple** this sheet to your solutions and return it to me by 5pm April 30th if graduating this semester or May 5th otherwise.
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We will study the toggle switch

$$u' = \frac{\alpha_1}{1 + v^\beta} - u$$
$$v' = \frac{\alpha_2}{1 + u^\gamma} - v$$

by modifying `mycub_fe.m` and `cub_err.m` and reproducing the two figures below. The first is a piece of the phase plane, with the null clines graphed as heavy red and blue lines.

We have graphed in thin black lines the solution emanating from initial data of the form `[i j]` where `i` and `j` are generated by commands like `for i=0:0.5:4`.

Submit each of your MATLAB programs and a diary of all relevant runs and a copy (preferably color) of your two well labeled figures.

(over)

Toggle Switch Phase Plane: $\alpha_1=\alpha_2=\gamma=3, \beta=2$

