

Name _____ Date _____

Instructions: Please show all of your work as partial credit will be given where appropriate, **and** there may be no credit given for problems where there is no work shown. All answers should be completely simplified, unless otherwise stated.

1. [8 points] For $f(x) = \frac{1}{2}x^2 - \frac{1}{x}$

- (a) For what **x** values is the function increasing? For what **x** values if the function decreasing?
[3 points]

Increasing: _____

Decreasing: _____

- (b) Find all local min and max **point(s)**. (Both x and y values) [2 points]

Max point(s): _____

Min point(s): _____

- (c) For what **x** values is the function concave up?
For what **x** values is the function concave down? [2 points]

Concave up: _____

Concave down: _____

- (d) Find all x-values of inflection point(s). [1 point]

x-value(s) of inflection point(s): _____

2. [7 points] The page of a book is to have a total area of 100 square inches, with 1-inch margins at the bottom and top and $\frac{1}{2}$ -inch margin at the sides. Find the dimensions of the page which will allow the largest printed area.

Answer 2: _____