

Please show **all** your work! Answers without supporting work will not be given credit.
Write answers in spaces provided.

Name: _____

1. [4 pts] Find the domain of

$$f(x, y) = \frac{\sqrt{x + y - 1}}{\ln(y - 11) - 9}$$

2. Describe the sketch of the level curves of the function for the function

$$f(x, y) = \ln(y - e^{5x})$$

- (a) [2 pts] Find the general equation for the level curves.
- (b) [1 pt] What functions $y = f(x)$, for you get for these values $z = 0, \ln(10)$?
- (c) [1 pt] What type of function describes the level curves?
- (i) Increasing exponential functions
 - (ii) Rational Functions with x-axis symmetry
 - (iii) Natural logarithm functions
 - (iv) Decreasing exponential functions
 - (v) Rational Functions with y-axis symmetry
- (d) [1 pt] Determine the Horizontal Asymptotes (HAs) of the level curves found in (b).
- (e) [1 pt] Sketch the level curves found in (b).