

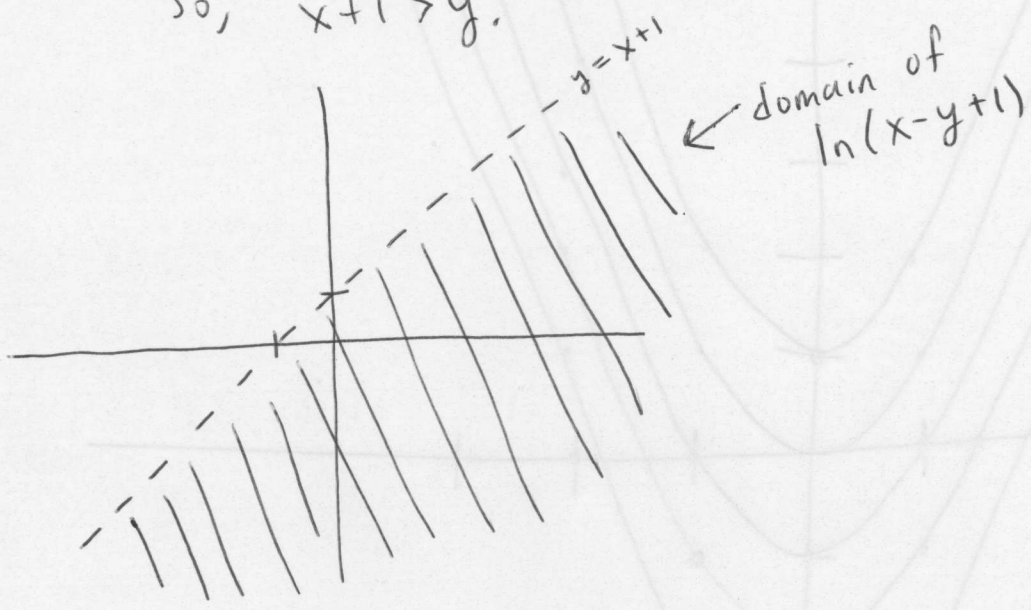
Directions: Show ALL of your work to get credit. If you leave something out, then you may be penalized. No calculators. Good luck!

IMPORTANT: This quiz is double-sided. Turn it over for the second problem!

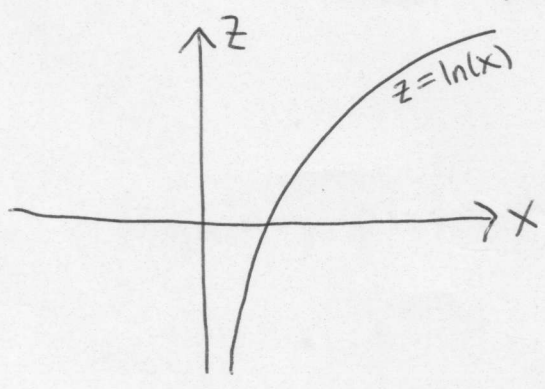
1. [10 points]

- (a) Find and sketch the domain of $f(x,y) = \ln(x-y+1)$.
- (b) Find the range of f .

(a) Need $x-y+1 > 0$.
 So, $x+1 > y$.



(b) What values can z be in $z = \ln(x-y+1)$.
 If we let $y=1$, then we have $z = \ln(x)$.
 Thus, z can be any real number.



range = $(-\infty, \infty)$.

2. [10 points] Draw a contour map of the function

$$f(x, y) = y - x^2 + 1$$

using the level curves associated with $k = -2, -1, 0, 1, 2$. Label each curve with its associated k .

$k=0:$ $y - x^2 + 1 = 0$ $y = x^2 - 1$	$k=1:$ $y - x^2 + 1 = 1$ $y = x^2$	$k=2:$ $y - x^2 + 1 = 2$ $y = x^2 + 1$	$k=-1:$ $y = x^2 - 2$	$k=-2:$ $y = x^2 - 3$
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