QUIZ 14 SOLUTIONS: LESSON 18
MARCH 1, 2019

Write legibly, clearly indicate the question you are answering, and put a box or circle around your final answer. If you do not clearly indicate the question numbers, I will take off points. Write as much work as you need to demonstrate to me that you understand the concepts involved. If you have any questions, raise your hand and I will come over to you.

1. [3 pts] If $f(x,y) = \sqrt{1+6x^2+2y^3}$, then compute $f(3,-3)$.

$f(3,-3) = \sqrt{1+6(3)^2+2(-3)^3}$
$= \sqrt{1+6(9)+2(-27)}$
$= \sqrt{1+54-54}$
$= \sqrt{1}$
$= \boxed{1}$

2. [5 pts] Find the domain of

$$f(x,y) = \frac{\sqrt{4-x}}{\ln(y+2)+7}.$$

① No division by 0
$\ln(y+2)+7 \neq 0$
$\Leftrightarrow y \neq e^{-7}-2$

② Even roots have non-negative input
$4-x \geq 0 \Leftrightarrow 4 \geq x$

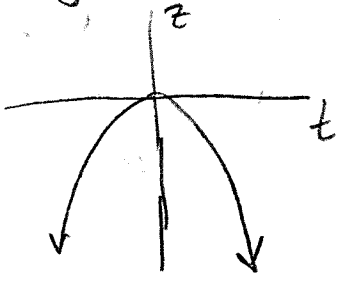
③ $\ln(\ )$ has positive input
$y+2 > 0 \Leftrightarrow y > -2$

$\text{Domain} = \{(x,y): y \neq e^{-7}-2,\ 4 \geq x,\ y > -2\}$

3. [2 pts] Find the range of

$$z = f(x,y) = -(3x+y^2)^2.$$

$t = 3x+y^2 \rightarrow z = -t^2$



$\text{Range} = \{z : z \leq 0\}$