MATH 100 solutions: QUIZ VII 1st November 2018

1. *[4 pts]* The temperature at the base of a mountain in the land of Oz is $90° F$ and decreasing by $5° F$ for every thousand-foot increase in elevation
2. Find a function, T(h), which expresses the temperature in degrees Fahrenheit at an elevation of *h* thousand-feet.

*Answer: T(h) = 90 – 5h*

1. What does T(4) = 55 mean?

*Answer: T(4) = 55 means that when your elevation is 4 thousand feet above the base of the mountain, the temperature is* $55° F.$

1. *[4 pts]* Let f(x) = x2 + 3
2. Find f(-2).

*Solution: f(-2) = (-2)2 + 3 =* ***7***

1. Find $\frac{f\left(1\right)+1}{f\left(2\right)-1}$

*Solution:* $\frac{f\left(1\right)+1}{f\left(2\right)-1}=\frac{4+1}{7-1}=\frac{5}{6}$

1. Find f (1 + f(2))

*Solution:* $f\left(1+f(2)\right)=f\left(1+7\right)=f\left(8\right)=67$

1. Find f (1 + f(1) + f(2))

*Solution:* $f\left(1+f\left(1\right)+f(2)\right)=f\left(1+4+7\right)=f\left(12\right)=147$

1. *[2 pts]* At the University of Oz, at the end of the semester, students’ math grades are listed in a table that gives each student’s ID number in the left column and the student's grade in the right column. Let *N* represent the ID number and *G* represent the grade. Which quantity, *N* or *G*, must necessarily be a function of the other?

*Solution: G is a function of N, namely G = f(N).*

*Each ID number determines a student that then determines the grade.*

*On the other hand, knowing the grade does not determine who the student is.*

1. *[6 pts]* Match each story about a bike ride to one of the graphs







***Answers:***

*Story (a): (ii)*

*Story (b): (i)*

*Story (c): (v)*

*Story (d): (iv)*

*Story (e): (ii)*

1. *[6 pts]* Ten inches of snow is equivalent to about one inch of rain.
2. Write an equation for the amount of precipitation, measured in inches of rain, r = f(s), as a function of the number of inches of snow, s.

*Answer:* $r=f\left(s\right)=\frac{1}{10} s$

1. Find and interpret f (5).

*Solution:*

$$f\left(5\right)=\left(\frac{1}{10}\right)\left(5\right)=\frac{1}{2} $$

*This means that 5 inches of snow is the equivalent of ½ inch of rain.*

1. Find s such that f(s) = 5 and interpret your result.

*Solution: If s = 50 then f(50) = 5. This means that 50 inches of snow is the equivalent of 5 inches of rain.*