Math 112 Written Homework: Functions

Student Name:_____

Instructor: Taryn Laird

Math 112 Section: 062

Directions: Show all work, and answer each question that is asked. Explanations should be given in complete sentences. All graphs should be drawn accurately on this sheet, and be fully labeled.

1. A salesperson is paid a weekly salary of $1000, plus a commission of 5% of all her sales for the week. Express her weekly income in terms of the weekly sales amount. (Make sure to define your variables!)

   Is weekly income a function of weekly sales? How do you know?

   What is an appropriate domain?

   Justify your domain with a sentence.

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2. The stopping distance of a car, d, as a function of its speed, v, is given by the formula $d = kv^2$, where k is a constant that is dependent on the specific car and conditions of the road. Suppose a certain car traveling 70 mph requires 177 feet to stop.

   Define the variables seen in the equation

   d:

   v:

   Find the constant k.

   Now use that information to approximate the stopping distance for this car traveling at 90 mph.

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3. Test market data shows that changing the price of a product changes the demand (the number of units that people are willing to purchase). For a certain product, the test market data indicates the following:

Purchase price (dollars)	1	2	3	4
Demand (# of units)	50,000	42,000	42,000	25,000

Does this table indicate that purchase price is a function of demand? Why or why not?

Does this table indicate that demand is a function of purchase price? Why or why not?

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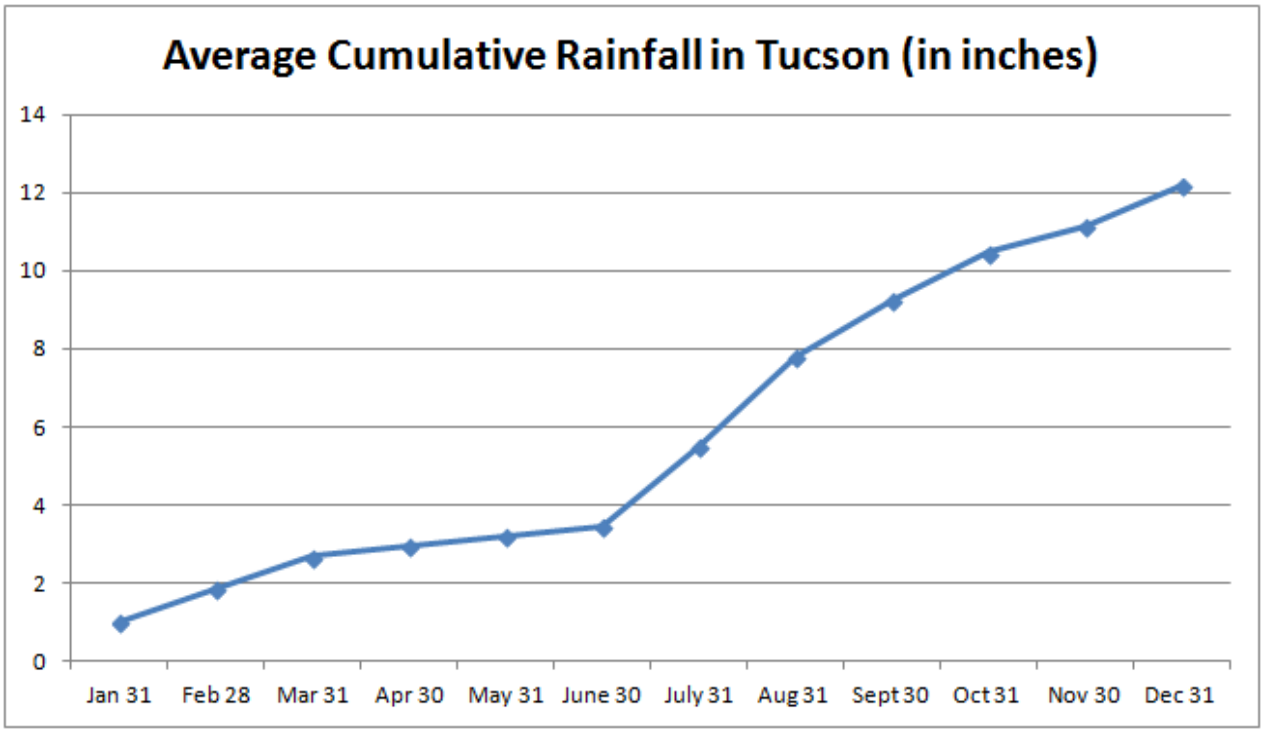
4. The average yearly cumulative rainfall in Tucson by month is shown in the graph below.



Does this graph represent cumulative rainfall as a function of the day? Why or why not?

What is the average annual cumulative rainfall in Tucson?

What is the approximate average rainfall in December?

During which month is average rainfall the greatest? How do you know?