Math 300 **Fall 2024**

Lab Assignment #7

This lab is due at 12:30 PM on Monday, 9/23 and is worth 10 points. This part may be done individually, or in a group of 2, 3, or 4 people.

1) A puppy weighs 12.9 pounds when it is 5 weeks old, and 19.1 pounds when it is 11 weeks old. Assume a linear growth model that is valid for 40 weeks.
a) What is its weight after n weeks?
b) What is its weight at birth?
c) What is its weight after 38 weeks?
d) How much weight does it gain per week?
e) How old will the puppy be when it weighs 35 pounds?

2) You have 255.3 grams of yarn after crocheting 20 rows of a scarf. You run out of yarn after 213 rows. Assume a linear growth model valid until you run out of yarn.

a) Find the amount of yarn you have remaining after you crochet n rows.

b) How much yarn did you start with?

c) How much yarn remains after 150 rows?

d) How much yarn is used in each row?

e) How many rows will be completed when there are 9 grams of yarn remaining?

3) At 3PM, you are at the 83-mile mark on the freeway. At 5:30PM, you are at the 261-mile mark. Assume a linear growth model for the time interval from 3PM to 5:30PM.
a) Find the position of the car n hours after noon.
b) What is the speed of the car?
c) Find the position of the car at 4PM?
d) When will the car be at mile 240?

4) For the 4th episode of Game of Futons, there were 5,600,000 viewers. But for the season finale, the 17th episode, there were 9,100,000 viewers. Assume a linear growth model for episodes 1 through 17.

a) Find a linear model for the number of viewers from episode n.

b) How many viewers did episode 1 have?

c) How many viewers did episode 13 have?

d) How many new viewers watched each episode?

e) Which episode had about 7,000,000 viewers?