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MAT 222

Spring 2019

Excel Lab 4: Ch. 10–11

“... And then I remember to relax, and stop trying to hold on to it. And then it flows through me like rain and I can't feel anything but gratitude for every single moment of my stupid little life. You have no idea what I'm talking about I'm sure, but don't worry, you will someday.”

–Lester Burnham, *American Beauty*

**Problem 1:** Using Calculus, one can find that the distance an object travels (in meters) when dropped after  $t$  seconds is given by  $d = \frac{1}{2}at^2$ , where  $a$  is the gravitational acceleration due to gravity on Earth. By dropping a ball from some fixed distance above the ground and measuring the time it takes the ball to impact the ground, one can approximate the gravitational acceleration on Earth by treating  $d$  as a linear variable in  $t^2$ . Suppose someone performs this experiment using a steel ball. They record their data in ‘Ball Times’ in `ball_mba.xlsx`. Use Excel to create a linear regression for this data. Provide a print off of this regression analysis. Then using the approximate slope of the line from the model, find  $a$ . Record your answer below.

$$a = \underline{9.41}$$

*Note: The actual value of  $a$  is approximately  $9.8 \text{ m/s}^2$ .*

**Problem 2:** A MBA program is trying to better understand which students to admit by trying to predict how well they will perform in their program. To do this, they will try to predict the new students first-year GPA from their admitted students undergraduate GPA and GPA scores (all of which they have from their applications). Given the data from 11 students in the tab labeled ‘GRE Scores’, use Excel to compute a multilinear regression to predict students first-year GPA using the given variables. Provide a print off of the analysis for the regression given by Excel.