

MATH 251 HOMEWORK 8
DUE NOVEMBER 20, 2017.
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Recall that homework is due at the **beginning of class** on the due date.

- (1) §4.1: 30, 44.
- (2) §4.3: 6, 12, 26, 36, 50, 57, 58, 63, 66.
- (3) §4.6: 4, 8, 10, 26, 32, 44, 58.
- (4) You work for an investment firm. Apple's stock is worth \$170 today. Your firm's research department tells you that the price of Apple's stock will grow between -5 and 20 dollars per day. Based on their analysis, what is the range of possible prices in a week? Justify your answer using the mean value theorem.
- (5) A police officer sees a car stopped at a traffic light and radios another police officer 30 miles down the road to tell her. The car reaches the second officer 28 minutes later, going 60 miles per hour. The second officer gives the driver a ticket for exceeding the 60 mph speed limit. How did she know? Justify your answer using the mean value theorem.¹
- (6) A police officer sees another car stopped at a traffic light and radios another police officer 30 miles down the road to tell her. The car reaches the second officer 30 minutes later, going 60 miles per hour. Should the second officer give this driver a ticket? (The speed limit is 60 mph.) Again, justify your answer using the mean value theorem.

Optional further, challenging-but-interesting problems.

- (1) §4.3: 61, 62, 65.
- (2) §4.4: 60.

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¹This problem and the next one are taken from *Calculus* by Briggs, Cochran, and Gillett.