Answers Week in Review 8

1. a.) 1
   b.) \(-\frac{1}{6}\)
   c.) 0
   d.) 0
   e.) e
   f.) \(e^4\)
   g.) 1
   h.) \(\frac{1}{2}\)

2. Problem 11 in text; answers provided in back of book. As for problem 12:
   \(f\) increasing: \(1 < x < 6\) and \(x > 8\), \(f\) decreasing \(0 < x < 1, 6 < x < 8\), \(f\) local max at \(x = 6\), \(f\) local min at \(x = 1\) and \(x = 8\), \(f\) concave up \(0 < x < 2, 3 < x < 5\) and \(7 < x < 9\), \(f\) concave down \(2 < x < 3\) and \(5 < x < 7\), \(f\) inflection point at \(x = 3, 2, 5, 7\).

3. Graph not available

4. a.) critical numbers: \(x = 0\) and \(x = -3\) because the derivative is 0 at these points.
   b.) critical numbers: \(x = 0\) and \(x = 8\) because the derivative is 0 at these points.
   c.) critical numbers: \(x = 0, x = 2\) (derivative does not exist) and \(x = 1\) (derivative is 0).
   d.) critical numbers: \(x = 0, x = 1\) (derivative does not exist) and \(x = 0.5\) (derivative is 0).

5. a.) absolute max: 4; absolute min: 0
   b.) absolute max: 2; absolute min: none

6. a.) absolute max: 66; absolute min: \(-15\)
   b.) absolute max: \(\ln 27\); absolute min: 0

7. a.) graph (answer not unique)

b.) graph (answer not unique)