

Practice problems for Calculus I Test III.

The test covers sections 3.9, 3.10, 4.1, 4.2, 4.3, 4.4, 4.5, 4.7.

NOTE: SLANT ASYMPTOTES ARE NOT ON THE TEST

1. There will be a related rates problem. See examples 1–4 in section 3.9.

Practice problems:

- (a) distance problems: #7, 10, 11;
- (b) formula problem: #8;
- (c) triangle problems: # 9, 12.

2. There will be a linearization problem. See example 2 in section 3.10.

Practice problems:

- (a) finding a linearization: #5–8;
- (b) estimating using a linearization: #31–34.

3. There will be a Rolle's Theorem/Mean Value Theorem problem. See examples 2 and 5 in section 4.2.

Practice problems:

- (a) State the Mean Value Theorem;
- (b) number of roots problems: #19–22;
- (c) bounding growth problems: #23–25.

4. There will be an optimization problem. See examples 1–5 in section 4.7.

Practice problems:

- (a) arithmetic problems: #1–4;
- (b) geometry problems: #7, 9–11;
- (c) distance problems: #15–17.

5. There will be a problem where you have to sketch the graph of a function, labeling all relative maxima and minima, all inflection points, all intercepts, and all horizontal and vertical asymptotes. See examples 1 and 2 in section 4.5. Consult sections 4.1, 4.3, 4.4 for details on the individual steps.

Practice problems: #1–17 odd, 23, 25.