

MA 141 Reading Assignment 7–Sec 2.3

- (1) State the Limit Laws. (5 on page 108, other 5 separate on page 109, another one on page 110, 11 laws total.)

- (2) Separate and simplify the following limits using the limit laws. See example 2. Evaluate the limit if you can.

(a) $\lim_{x \rightarrow 2} (5x^3 + 6x^2 + 7)$

(b) $\lim_{x \rightarrow 10} \frac{7x^2 - 6x + 5}{x - 1}$

(c) $\lim_{x \rightarrow 1} \sqrt{\frac{4x^3 + 5}{2x + 4}}$

- (3) State the Direct Substitution Property.
- (4) Explain what the Direct Substitution Property means in your own words.
- (5) Do the limit laws hold for one-sided limits?
- (6) Suppose $\lim_{x \rightarrow a^-} f(x) = L_1$ and $\lim_{x \rightarrow a^+} f(x) = L_2 \neq L_1$. Does $\lim_{x \rightarrow a} f(x)$ exist?
- (7) State Theorems 1 and 2 (in boxes 1 and 2).
- (8) State the Squeeze Theorem.
- (9) Considering example 10, explain why the Squeeze theorem is helpful in calculating limits.

- (7) State the definitions of right and left continuity at a point.
- (8) State the definition of continuity on an interval.
- (9) State Theorem 4 in box 4. Note that this theorem applies also to continuity on an interval.
- (10) State Theorem 5 in box 5.
- (11) What functions are continuous at every number in their domains? (See box 7)
- (12) State Theorem 8 in box 8.
- (13) State Theorem 9 in box 9. "A continuous function of a continuous function is a continuous function."
- (14) State the Intermediate Value Theorem.
- (15) Explain in your own words what the Intermediate Value theorem means.