

Instructions: The same rules apply. In particular, your write-ups should include an indication of how you arrive at your solution. You should do each of the following reading assignments and homework problems. However, turn in only the underlined exercises. Each assignment is due at 4:00 PM on the indicated day. You may turn in an assignment one day late and incur a 10% penalty. Those exercises marked with an asterisk are important and may be discussed in class.

I encourage you to use Derive or Mathematica to check your work on any homework exercise.

Tuesday, Week 2

Reading: 3.9, 3.10(up to Derivatives of Hyperbolic Functions), 3.11(up thru Example 3)

Exercises:

- (3.6) 1, 3, 7*, 23
 (3.7) 1, 3, 6, 15, 17, 21*, 22, 27, 29, 35, 37, 49
 (3.8) 1*, 3, 11, 12, 24, 25

Wednesday, Week 2

Reading: finish 3.11, 4.1(up to linearization), 4.2(up thru Theorem 1)

Exercises:

- (3.9) 1, 19*, 23, 27
 (3.10) 3, 7, 10, 35, 36
 (3.11) 3, 4, 7, 10

Thursday, Week 2

Reading: Finish 4.1, 4.2, sections 4.3(up to Proof of the MVT), 4.4

Exercises:

- (3.11) 12, 13*, 15, 16
 (4.1) 1, 9, 14
 (4.2) 1, 2

Friday, Week 2

Reading: No new

Exercises:

- (4.1) 17, 28
 (4.2) 1, 2, 5, 12, 19, 21
 (4.3) 1, 7, 12
 (4.4) 1, 2

Extra Credit: Due Friday of Week 3 at 3:30 PM. Turn this into the instructor separate from any regular assignment.

All work must be entirely your own.

C. The hyperbolic trig functions have many applications in physics, including relativity theory. Read 'Hyperbolic Functions', 'Inverse Hyperbolic Functions', and 'Einstein's Law of Velocity Addition' (p. 48-51) and 'Derivatives of Hyperbolic Functions' and 'Inverse Hyperbolic Functions' (p. 194-197). Verify the hyperbolic identity, $\cosh^2(x) - \sinh^2(x) = 1$. Also turn in problems 60, 62, and 70 from section 3.10.

D. Let $f(x) = \begin{cases} x^2 & \text{for } x \leq 0 \\ -x^2 & \text{for } x > 0 \end{cases}$.

- Sketch the graph of f .
- Calculate $f'(x)$ and $f''(x)$. Do these exist for all real numbers x ?
- Are there any points of inflection? If so, does $f''(x) = 0$ at those points?