

**Homework 6 - Math 141, Frank Thorne (thornef@mailbox.sc.edu)**

- (a) Thomas, 3.8: 11-18, 41-44, 69-74 (even required, odd additional).
- (b) Sketch graphs of the six inverse trigonometric functions  $\sin^{-1}(x)$ ,  $\cos^{-1}(x)$ ,  $\tan^{-1}(x)$ ,  $\cot^{-1}(x)$ ,  $\sec^{-1}(x)$ , and  $\csc^{-1}(x)$ . State their domains and ranges, and compute their derivatives.
- (c) Thomas, 3.9: 1-8, 21-28 (Even required, odd additional).
- (d) Thomas, 3.10: 17-40 (Even required, odd additional). Remember that you are **required to draw and label a suitable picture** when appropriate to the problem.
- (e) A searchlight  $L$  is 200 feet from a prison wall. It rotates at a constant rate of one revolution per 6 minutes.

An escaped felon is running along the wall trying to keep just ahead of the beam of light. At the moment when the searchlight angle is 45 degrees, how fast does the prisoner have to run?