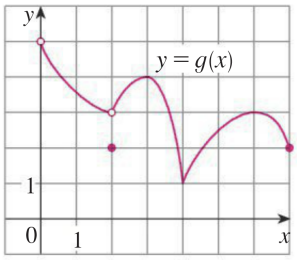
ACMAT161 Summer 2024
Professor Manguba-Glover
Homework 15 Name: _____

Show all work, simplify, and box your answers. If you do the problem incorrectly, or don't show sufficient work, you will be asked to rewrite the problem for full credit.

Due next class. Students who turn assignments in late (or do not attempt a problem) forfeit their ability to rewrite those problems for credit.

1. Use the graph to state the absolute and local maximum and minimum values of the function.



2. Sketch the graph of a function f that is continuous on $[1, 5]$ and has the given properties: Absolute maximum at 4, absolute minimum at 5, local maximum at 2, local minimum at 3.

3. Find the critical numbers of the function $f(x) = x^3 + 6x^2 - 15x$

4. Find the absolute maximum and absolute minimum values of f on the given interval:

$$f(x) = x^3 - 6x^2 + 5, \quad [-3, 5]$$

5. Find the absolute minimum and maximum values of each function on the given interval:

$$f(\theta) = \sin\theta, \quad -\frac{\pi}{2} \le \theta \le \frac{5\pi}{6}$$

6. Show that the equation has exactly one real root.

$$2x - 1 - \sin x = 0$$