Math 1823 homework

27. (10/26) as many as needed from 3.7 # 5-17

28. (10/26) 3.7 # 18-22, 25, 26, 36, 38, 52

29. (10/26) as many as needed from 3.8 # 5-20, 43-46

30. (10/26) 3.8 # 26, 27, 35, 36, 37, 53, 54, 55

31. (11/16) 3.9 # 7, 9, 14, 19, 26, 31, 32

32. (11/16) Verify part 2 of "Local effect of f'", using a direct argument (that is, not by deducing it from part 1, but by using an argument analogous to the one we used in class to verify part 1). Here is the statement of part 2:

    2. If $f'(a) < 0$, then there exists $\delta > 0$ so that
       (a) if $a < x < a + \delta$, then $f(a) > f(x)$, and
       (b) if $a - \delta < x < a$, then $f(x) > f(a)$.

33. (11/16) 4.1 # 35, 37, 38, 43, 44, 45, 46, 51, 52, 55, 56, 57

34. (11/16) 4.2 # 13-18, 22, 26-29, 34

35. (11/16) 4.2 # 23, 24, 30

36. (11/16) 4.3 # 5, 6, 23, 25, 26

37. (11/30) 4.3 # as many as needed from 29-40, including at least # 34, 40

38. (11/30) 4.3 # 52, 57, 61

39. (11/30) Following the method we used in class, use the Mean Value Theorem to verify that if $f''(x) < 0$, then the graph of f lies below its tangent line (examine the function $g(x)$ which is the difference between $f(x)$ and the y-value on the tangent line).

40. (11/30) 4.4 # 15, 19, 23, 32, 53, 54

41. (11/30) 4.5 # 7, 10, 18, 19, 22, 32, 36

42. 4.7 # 7, 9, 12, 23, 25, 29, 35 (hint: maximize V as a function of the radius of the top of the cup, not as a function of the angle), 42

43. 4.10 # 5, 7, 11-16, 19-23, 27, 35-38