HOMEWORK DAY 35 – *Volumes: solids of revolution §5.2*

1. §5.2: 61 (cap of a sphere)

2. §5.2: 75 (volume of torus)

3. §5.2: 84 (volume of sphere with hole) - set up integral only

HOMEWORK DAY 36 – *Work §5.4*

4. §5.4: 3

5. §5.4: 5

6. §5.4: 9

7. §5.5: 2

8. §5.5: 9

9. §5.5: 15

10. An aluminum rod is 8cm long. The temperature of the rod at a point x cm from one end is given by

$$T(x) = \begin{cases} x^3 - x^2 + 32 \ , & 0 \leq x \leq 2 \\ 36 - 2x + x^2 \ , & 2 < x \leq 8 \end{cases}$$

Find the average temperature of the rod.

11. §5.5: 20 (average vs maximal blood flow)

12. Consider the function $f(x) = \sin(x) - \cos(x)$.

    (a) Find the average f_{av} of f over the interval $[a, a + \pi]$.

(b) For what value of $a \in [0, \pi]$ is the average on $[a, a + \pi]$ largest?

(c) The figure shows a graph of f. Show the interval $[a, a + \pi]$ over which the average is maximal and the line $y = f_{av}$ for that interval. Explain why for any other a the average would clearly be less.