Math 172 - Quiz 7

Name _____

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (5 points) Find the area of the surface obtained by revolving the graph of $f(x) = \sqrt{x}$ on the interval $[0, 2]$ about the x-axis. Evaluate your integral by hand.

2. (5 points) A bucket weighing $4\,\text{lb}$ when empty and attached to a rope of negligible weight is used to draw water from a well that is $30\,\text{ft}$ deep. Initially, the bucket contains $40\,\text{lb}$ of water, but as it is pulled up at a constant rate of $2\,\text{ft/sec}$, the water leaks out of the bucket at the rate of $0.2\,\text{lb/sec}$. Find the work done in pulling the bucket to the top of the well.