Each problem is worth 5 points. Clear and complete justification is required for full credit.

1. Set up an integral and evaluate it to find the arc length of $y = x^{3/2}$ on the interval [1,2].

2. Find \overline{x} , the x-coordinate of the center of mass, for the region lying underneath the graph of $f(x) = \sqrt{x}$ on the interval [1,4].

3. Find the Taylor polynomial T₃ centered at x = 2 for $f(x) = \frac{1}{1+x}$.