3. Use Simpson's rule to estimate the area of the following shape. All measurements are in feet.

\[
\text{Area} \approx \frac{h}{3} \left[ f(x_0) + 4f(x_1) + 2f(x_2) + 2f(x_3) + 4f(x_4) + f(x_5) \right]
\]

\[
\text{Area} \approx \frac{2}{3} \left[ 6 + 4.5 + 2.10 + 4.6 + 8 \right]
\]

4. Does the series \( \sum_{k=1}^{\infty} \left(1 - \frac{1}{k}\right)^k \) converge? Justify your answer. Find the sum of the series if you can.

\[
\lim_{k \to \infty} \left(1 - \frac{1}{k}\right)^k = e^{-1} \neq 0
\]

The \( n^{th} \) term does not go to zero.

So, the \( n^{th} \) term test tells us that the series diverges.