Solutions to exercises in Section 4.6: #23.

#23. Notice that $a = 0$, $b = 2$ and $f(x) = x^3$. So, $f''(x) = 6x$ and $f^{(4)} = 0$. Then the error for the Trapezoidal Rule with $n = 4$ is

$$E \leq \frac{(2 - 0)^3}{12 \cdot 4^2} \left[ \max_{0 \leq x \leq 2} 6x \right] = 0.5.$$ 

The error for Simpson’s Rule is $E \leq 0$. 