

For each problem compute the solution in seven different ways:

- (a) Find the exact solution, if possible, by evaluating symbolically.
- (b) Find a numeric approximation by using the approximation command in the context menu.
- (c) Find a numeric approximation by using the Right Rectangle Rule.
- (d) Find a numeric approximation by using the Left Rectangle Rule.
- (e) Find a numeric approximation by using the Midpoint Rule.
- (f) Find a numeric approximation by using the Trapezoidal Rule.
- (g) Find a numeric approximation by using Simpson's Rule.

Note: For parts (c)-(g), you must input an appropriate summation yourself using the summation symbol rather than using the tutor or a command. You should use $n = 50$. Display each approximation to ten digits. If you wish, you may check your answers by using either the Riemann Sums tutor or *Maple's* *RiemannSum* command.

1. Find the area under the graph of f defined by

$$f(x) = \frac{\sqrt{1 + \cos x}}{x + 1} \text{ for } x \in [0, \pi].$$

2. Find the total distance traveled by a particle in ten minutes, starting at $t = 0$, which moves on a linear path when the velocity of the particle in meters per second is given by

$$v(t) = \sqrt{t} \sin\left(\sqrt[3]{t + 1}\right).$$

State each solution in a complete sentence with the answer rounded to the nearest meter.