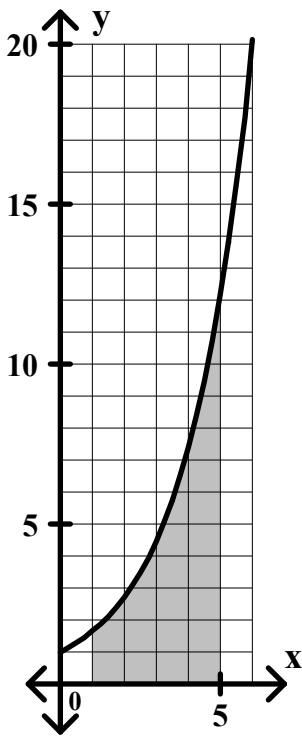


Calculus Worksheet #4 Unit 10 Selected Solutions

Sketch the region described in each problem and find its area (3 significant digits).

1. The region is bounded by the x-axis, the lines $x = 1$ and $x = 5$, and the graph of the function $f(x) = e^{0.5x}$.

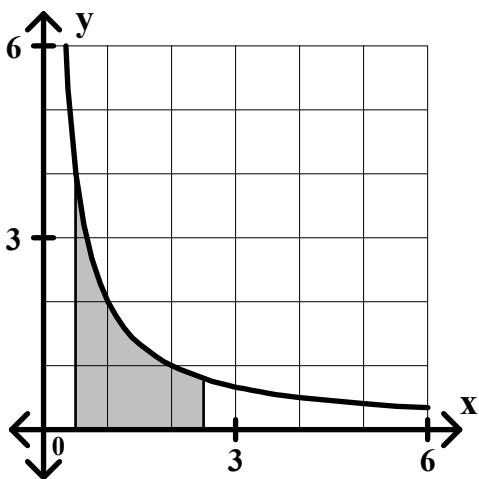


$$y = e^{0.5x}$$

x	y
0	1
1	1.65
2	2.72
3	4.48
4	7.39
5	12.2
6	20.1

$$\begin{aligned}
 A &= \int_1^5 e^{0.5x} dx = 2e^{0.5x} \Big|_1^5 \\
 &= 2[e^{2.5} - e^{0.5}] \approx 21.1 \text{ sq. units}
 \end{aligned}$$

4. The region is bounded by the x-axis, the lines $x = 0.5$ and $x = 2.5$, and the graph of the function $f(x) = 2/x$.



$$y = \frac{2}{x}$$

x	y
1	2
2	1
3	.667
4	.5
5	.4
6	.333

$$\begin{aligned}
 A &= \int_{0.5}^{2.5} \frac{2}{x} dx = 2[\ln|x|] \Big|_{0.5}^{2.5} \\
 &= 2[\ln(2.5) - \ln(0.5)] \\
 &= 2[\ln(5)] = \ln(25) \approx 3.22 \text{ sq. units}
 \end{aligned}$$