7.1 Area of a Region Between Two Curves

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P 18. Sketch the region bounded by the graphs of the equations

$$y = -x^3 + 2, \; y = x - 3, \; x = -1, \; \text{and } x = 1$$

and find the area of the region.

P 22. Sketch the region bounded by the graphs of the equations

$$y = \frac{4}{x^3}, \; y = 0, \; x = 1, \; \text{and } x = 4$$

and find the area of the region.

P 24. Sketch the region bounded by the graphs of the equations

$$f(x) = \sqrt[3]{x-1} \text{ and } f(x) = x - 1$$

and find the area of the region.

P 26. Sketch the region bounded by the graphs of the equations

$$f(y) = y(2 - y) \text{ and } g(y) = -y$$

and find the area of the region.

P 28. Sketch the region bounded by the graphs of the equations

$$f(y) = \frac{y}{\sqrt{16 - y^2}}, g(y) = 0, \text{ and } y = 3$$

and find the area of the region.

P 38. Sketch the region bounded by the graphs of the equations

$$f(x) = \sin x \text{ and } g(x) = \cos 2x,$$

where $-\pi/2 \le x \le \pi/6$ and find the area of the region.

P 41. Sketch the region bounded by the graphs of the equations

$$f(x) = xe^{-x^2}, \text{ and } y = 0$$

where $0 \leq x \leq 1$ and find the area of the region.

P 56. Use integration to find the area of the figure having vertices $(0,0)$, $(6,0)$, and $(4,3)$.

P 64. Set up and evaluate the definite integral that gives the area of the region bounded by the graphs of

$$y = \frac{2}{1 + 4x^2}$$

and the tangent line to the graph at $(1/2, 1)$.