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**1.**(Redux) Consider $f(x) = x^2 + 1$ on the interval $[0, 4]$. Let $n = 4$.

(a) Sketch the graph of $f(x)$.

(b) Divide the interval into $n = 4$ equal subintervals. What is the length of each subinterval?

(c) Indicate the endpoints of each subinterval on your graph from part (a).

(d) Draw the rectangles corresponding to the left Riemann sum for $n = 4$.

(e) On the same graph, draw the rectangles for the right Riemann sum.

(f) Compute the left and right Riemann sums.

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**2.** Consider $f(x) = 8x - x^2$ on the interval $[0, 8]$. Let $n = 8$.

(a) Sketch the graph of $f(x)$. Divide $[0, 8]$ into $n = 8$ subintervals and indicate the endpoints on your graph.

(b) Draw the rectangles corresponding to the left and right Riemann sums.

(c) Compute the left and right Riemann sums.

(d) Compute the indefinite integral $F(x) = \int f(x)\,dx$. What is $F(8) - F(0)$? Make an observation.

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**3.** Write antiderivatives for each of the following functions:

(a) $5x^4 - 6x^3 + 2x - 1$ (b) $\sin(x) + \sec(x)\tan(x)$

(c) $\dfrac{1}{8 + 8x^2}$ (d) $\dfrac{1}{\sqrt{9 - x^2}}$