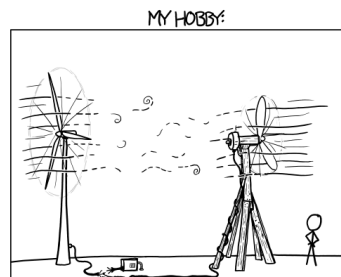


Worksheet 27: Riemann Sums

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1. Write a summation approximating the area under $f(x) = x^2$ over the interval $[-1, 1]$ with n rectangles where the height of each rectangle is given by the height at the right endpoint.
2. Write a summation approximating the area under $f(x) = x^2$ over the interval $[-1, 1]$ with n rectangles where the height of each rectangle is given by the height at the left endpoint.
3. Write a summation approximating the area under $f(x) = x^2$ over the interval $[-1, 1]$ with n rectangles where the height of each rectangle is given by the maximum height over the rectangle's width (the upper sum).

4. Write a summation approximating the area under $f(x) = x^3$ over the interval $[-1, 1]$ with n rectangles (determine the height however you wish).
5. (a) Plug in $n = 4$ in problem 4; what happens with the area for the first rectangle?
- (b) Does this make sense? Why or why not?
6. If you wanted to determine the exact area for problems 1-4, what could you do mathematically?