

5 April 2016

1. **Warm up:** Let  $f$  be a function with an antiderivative  $F$ , and  $g$  a function with an antiderivative  $G$ . That is,  $F'(x) = f(x)$  and  $G'(x) = g(x)$ . Answer the following questions with True / False.

(a) If  $f = g$ , then  $F = G$ .

(b) If  $F$  and  $G$  differ by a constant, then  $f = g$ .

(c) If  $f$  and  $g$  differ by a constant, then  $F = G$ .

2. Find antiderivatives of the following functions. Remember to simplify!

(a)  $\frac{4x^{13} - 3x^{-4}}{x^2}$

(b)  $\frac{\sin(\theta) - 1}{\cos^2(\theta)}$

3. Consider the sum  $2 + 4 + 6 + 8 + 10 + 12 + 14 + 16$ . Using summation notation, rewrite it as a sum whose index

(a) starts at 1 and ends at 8,

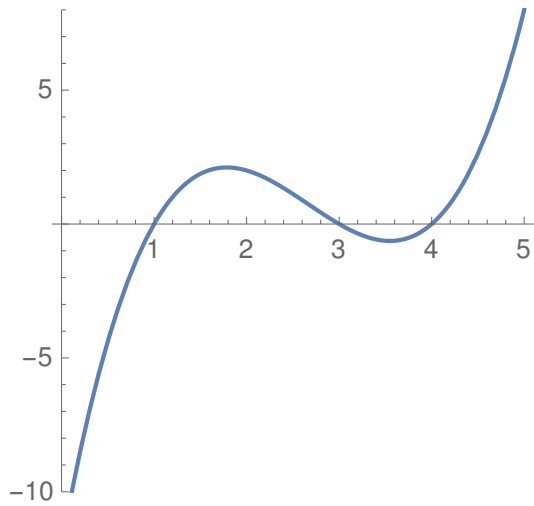
(b) starts at 0 and ends at 7,

(c) starts at 25 and ends at 32,

(d) starts at 1 and ends at 4.

4. Consider the function  $y = x^3 - 8x^2 + 19x - 12 = (x - 1)(x - 3)(x - 4)$ . Draw the rectangles that represent the right Riemann sums and give the sums themselves (do not evaluate them) for the given number of intervals below, on  $[0, 5]$ .

(a) 5 intervals



(b) 10 intervals

