

8.13 Arc Length

Calculus

Name: _____

CA #1

1. Find an equation for the length of the curve $y = \sec 2x$ from $x = 0$ to $x = \frac{\pi}{6}$. **Do Not Evaluate.**

2. **No Calculator.** Suppose $F(x) = \int_0^x \sqrt{3 - 4 \sin^2 t} dt$. What is the length of the arc along the curve $y = F(x)$ for $0 \leq x \leq \frac{\pi}{3}$?

3. Set up an integral that will give the length of the curve from $x = 2$ to $x = 7$ for $y = 4e^{\frac{x}{2}}$. **Do Not Evaluate.**

4. **No Calculator.** Let f be a function with derivative given by $f'(x) = \sqrt{4x^2 - 1}$. Find the length of the graph of $y = f(x)$ from $x = -3$ to $x = 7$.

5. Let R be the region bounded by the graphs of $f(x) = -x^2$ and $g(x) = -4$. Write an expression including one or more integrals that gives the perimeter of the region R . **Do Not Evaluate.**

1. $\int_{\frac{\pi}{6}}^0 \sqrt{1 + (2 \sec 2x \tan 2x)^2} dx$	2. $\sqrt{3}$	3. $\int_{-3}^7 \sqrt{1 + 4e^x} dx$	4. 40	5. $4 + \int_{-2}^{-2} \sqrt{1 + 4x^2} dx$
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