Technology Project #3—Arc Length

Arc Length

Arc Length is an application that uses integrals. For this assignment you are going to learn what the arc length formula is and where it comes from, what it means to find arc length, and how to use Mathematica to evaluate the integrals in arc length problems.

Use the following video to learn about Arc Length. I suggest following the instructor as she shows you how to use Mathematica and ensure that you are inputting the formula in correctly.

Video: https://www.youtube.com/watch?v=1OantesKWR4

Directions: Please use Mathematica to complete the following problems. Please organize your work and do each problem in a separate section cell.

For each of the following functions, please graph the given portion of the curve and then find the length of the curve.

1. $y = 3x^2 + 2x - 4;\ -3 \le x \le 5$
2. $y = 5\sin(2x) - x^2;\ -2\pi \le x \le 2\pi$
3. $y = \frac{7}{x^2+2}, -1 \le x \le 1$
4. $x = 5y^2 + 3y - 1$ from the point $(25,2)$ to the point $(91,4)$. You will need to investigate how to graph when it is $x =$ instead of $y =$ in Mathematica. When you get done graphing it should look like a side-ways parabola.

When you are done, please upload the assignment to I-Learn.