

Arc Length Application Problems

Arc Length Application Problems - Section 2-1 : Arc Length Set up, but do not evaluate, an integral for the length of $y = \sqrt{x+2}$, $1 \leq x \leq 7$ using, Set up, but do not evaluate, an integral for the length of $x = \cos(y)$, $0 \leq x \leq 1$ using, Determine the length of $y = 7(6+x)^3$, $2 \leq y \leq 875$. Solution. Determine the length of $x = \dots$ A circle has a radius of 7 inches. Find the arc length intercepted by a central angle of 280° . Application: Arc Length. 7.1 The General Problem. The Riemann integral has a wide variety of applications. In this section, using the 'subdivide and conquer' strategy we will show how it can be used to determine the lengths of certain curves. EXAMPLE 7.1. Verizon is hanging fiber optic cable around Geneva. Example 1 Give the length of the arc cut off by a central angle of 2 radians in a circle of radius 4.3 inches. Solution: We have $\theta = 2$ and $r = 4.3$ inches. If we are working with relatively small central angles in circles with large radii, we can use the length of the intercepted arc to approximate the length of the associated chord.