Name: _____   Date: _____   Period: _____   2017

AP Calculus – Worksheet – 7.4 – Lengths of Curves

Find the length of each curve **analytically**. Intervals are in terms of the equation.

1. $y = \dfrac{1}{2}x$ from $[1,5]$

2. $y = x^{\frac{3}{2}}$ from $\left[\dfrac{4}{3},5\right]$

3. $y = \dfrac{x^3}{6} + \dfrac{1}{2x}$ from $\left[\dfrac{1}{2},2\right]$

4. $y = x^{\frac{2}{3}} + 1$ from $[0,8]$

5. $x = (y-1)^{\frac{3}{2}}$ from $[1,5]$

6. $x = \dfrac{y^4}{8} + \dfrac{1}{4y^2}$ from $[-2,-1]$

7. $x = \ln(\cos y)$ from $\left[0, \dfrac{\pi}{3}\right]$

8. $x = y^2 - \dfrac{1}{8}\ln y$ from $[1,3]$

Setup the integral and find the length of the arc by any method.

9. $y = 2^x$ from $[0,3]$

10. $x = y + y^3$ from $[1,4]$

11. $y = xe^{-x}$ from $[0,5]$

12. $x = y + \sqrt{y}$ from $[1,2]$