Unit 8 - Week 6:

Assignment 6

You can try submitting your answers during the time you are working on the assignment. However, you can only submit your answers once, in only one attempt.

Due on 2020-03-1, 23:59 GMT.

1. The length of the curve $y = \ln \left( x^2 + \frac{1}{4} \right)$ from $x = 1$ to $x = 2$ is $\int_{1}^{2} \sqrt{1 + \left( \frac{2x}{x^2 + \frac{1}{4}} \right)^2} \, dx$.

2. The length of the curve $y = -\ln \left( x - 1 \right)$ from $x = 1$ to $x = 2$ is $\int_{1}^{2} \sqrt{1 + \left( -\frac{1}{x-1} \right)^2} \, dx$.

3. The length of the curve $y = x^3 - 3x^2 + 2x - 1$ from $x = 0$ to $x = 1$ is $\int_{0}^{1} \sqrt{1 + \left( 3x^2 - 6x + 2 \right)^2} \, dx$.

4. The length of the curve $y = 2\sin(x)$ from $x = 0$ to $x = \pi$ is $\int_{0}^{\pi} \sqrt{1 + \left( 2\cos(x) \right)^2} \, dx$.

5. The length of the curve $y = e^{-x^2}$ from $x = -1$ to $x = 1$ is $\int_{-1}^{1} \sqrt{1 + \left( -2xe^{-x^2} \right)^2} \, dx$.

6. The length of the curve $y = \ln \left( x^2 + \frac{1}{4} \right)$ from $x = 1$ to $x = 2$ is $\int_{1}^{2} \sqrt{1 + \left( \frac{2x}{x^2 + \frac{1}{4}} \right)^2} \, dx$.

7. The length of the curve $y = -\ln \left( x - 1 \right)$ from $x = 1$ to $x = 2$ is $\int_{1}^{2} \sqrt{1 + \left( -\frac{1}{x-1} \right)^2} \, dx$.

8. The length of the curve $y = x^3 - 3x^2 + 2x - 1$ from $x = 0$ to $x = 1$ is $\int_{0}^{1} \sqrt{1 + \left( 3x^2 - 6x + 2 \right)^2} \, dx$.

9. The length of the curve $y = 2\sin(x)$ from $x = 0$ to $x = \pi$ is $\int_{0}^{\pi} \sqrt{1 + \left( 2\cos(x) \right)^2} \, dx$.

10. The length of the curve $y = e^{-x^2}$ from $x = -1$ to $x = 1$ is $\int_{-1}^{1} \sqrt{1 + \left( -2xe^{-x^2} \right)^2} \, dx$.