Answer on Question #72686, Math / Geometry
Find the arc length of the curve
$$\gamma(t) = (t, \ln t, t \ln t), 1 \le t \le 2$$
Solution
The length of a curve from $t = a$ to $t = b$ is given by
$$\int_a^b \sqrt{(x'(t))^2 + (y'(t))^2 + (z'(t))^2} \, dt$$
We call this arc length.
Then
$$L = \int_1^2 \sqrt{((t)')^2 + ((\ln t)')^2 + ((t \ln t)')^2} \, dt$$

$$L = \int_1^2 \sqrt{1 + \frac{1}{t^2} + (\ln t)^2 + 2 \ln t + 1} \, dt \approx 1.858054696497771$$

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