

Name: Example Student

Example Quiz

Instructions. You have 5 minutes to complete this quiz. You may use your calculator. You may not use any other materials (e.g., notes, homework, books).

Problem	Weight	Score
1	1	4
Total		4 / 10

Problem 1. Find $\frac{d}{dt} \sqrt{\sin\left(\frac{\pi}{6}e^t\right)}$ at $t = 0$.

$$\begin{aligned} \frac{d}{dt} \sqrt{\sin\left(\frac{\pi}{6}e^t\right)} &= \frac{d}{dt} \left(\sin\left(\frac{\pi}{6}e^t\right) \right)^{\frac{1}{2}} \\ &= \frac{\frac{1}{2} \left(\sin\left(\frac{\pi}{6}e^t\right) \right)^{-\frac{1}{2}} \cdot \frac{\pi}{6} e^t}{\times} \\ &= \frac{\pi}{12} e^t \left(\sin\left(\frac{\pi}{6}e^t\right) \right)^{-\frac{1}{2}} \end{aligned}$$

$$\begin{aligned} \text{So, } \frac{d}{dt} \sqrt{\sin\left(\frac{\pi}{6}e^t\right)} \Big|_{t=0} &= \frac{\pi}{12} e^0 \left(\sin\left(\frac{\pi}{6}e^0\right) \right)^{-\frac{1}{2}} \\ &= \frac{\pi}{12} \left(\sin\left(\frac{\pi}{6}\right) \right)^{-\frac{1}{2}} \\ &= \frac{\pi}{12} \left(\frac{\sqrt{3}}{2} \right)^{-\frac{1}{2}} \times \end{aligned}$$

Example Student
Resubmission of Example Quiz
28 August 2019

Problem 1. I did not apply the chain rule correctly.
I also used the wrong value for $\sin(\frac{\pi}{6})$, which is $\frac{1}{2}$, not $\frac{\sqrt{3}}{2}$.

$$\begin{aligned}\frac{d}{dt} \sqrt{\sin\left(\frac{\pi}{6}et\right)} &= \frac{d}{dt} \left(\sin\left(\frac{\pi}{6}et\right)\right)^{\frac{1}{2}} \\ &= \frac{1}{2} \left(\sin\left(\frac{\pi}{6}et\right)\right)^{-\frac{1}{2}} \left(\frac{\pi}{6}e^t \cos\left(\frac{\pi}{6}et\right)\right) \\ &= \frac{\pi}{12} e^t \cos\left(\frac{\pi}{6}et\right) \left(\sin\left(\frac{\pi}{6}et\right)\right)^{-\frac{1}{2}}\end{aligned}$$

$$\begin{aligned}\text{So, } \frac{d}{dt} \sqrt{\sin\left(\frac{\pi}{6}e^t\right)} \Big|_{t=0} &= \frac{\pi}{12} e^0 \cos\left(\frac{\pi}{6}e^0\right) \left(\sin\left(\frac{\pi}{6}e^0\right)\right)^{-\frac{1}{2}} \\ &= \frac{\pi}{12} \cos\left(\frac{\pi}{6}\right) \left(\sin\left(\frac{\pi}{6}\right)\right)^{-\frac{1}{2}} \\ &= \frac{\pi}{12} \left(\frac{\sqrt{3}}{2}\right) \left(\frac{1}{2}\right)^{-\frac{1}{2}} \\ &= \frac{\pi}{24} \sqrt{\frac{3}{2}} \\ &= \frac{\pi}{4\sqrt{6}}\end{aligned}$$

I pledge on my honor that I have not used any unauthorized materials, and that I have not given nor received any unauthorized assistance for this resubmission.

Example Student