

Homework 7 (Chap. 3.9), 78.00/110.00 (70.91%)

October 29, 2019

Problem 1 score: 10/10

ok

Problem 7 score: 10/10

ok

Problem 11 score: 10/10

ok

Problem 15 score: 0/10¹

$$\frac{25}{3} \neq 6\frac{1}{3}$$

Problem 17 score: 8/10²

$$z = \sqrt{x^2 + y^2} = t \sqrt{\left(\frac{dx}{dt}\right)^2 + \left(\frac{dy}{dt}\right)^2}$$

this is not explained very well³.

Problem 21 score: 10/10

ok

Problem 23 score: 10/10

ok

¹similar problems: 14,16

²similar problems: 18,19

³cf. what you wrote in Problem 23: $y = \frac{dy}{dt}t, x = \frac{dx}{dt}t$; I think that is better

Problem 29 score: 10/10

ok

Problem 31 score: 10/10

ok

Problem 39 score: 0/10⁴

$$R = \frac{R_1 R_2}{R_1 + R_2} \\ \frac{\left(\frac{dR_1}{dt} R_2 + R_1 \frac{dR_2}{dt}\right) (R_1 + R_2) \cancel{R_1 R_2} \left(\frac{dR_1}{dt} + \frac{dR_2}{dt}\right)}{(R_1 + R_2)^2}$$

(should be

$$\frac{\left(\frac{dR_1}{dt} R_2 + R_1 \frac{dR_2}{dt}\right) (R_1 + R_2) - R_1 R_2 \left(\frac{dR_1}{dt} + \frac{dR_2}{dt}\right)}{(R_1 + R_2)^2} \Bigg).$$

Problem 47 score: 0/10⁵

$$z^2 = (h + x \sin \theta)^2 + x^2 \cos^2 \theta \\ 2z \frac{dz}{dt} = 2(h + x \sin \theta) \cdot \cancel{\frac{dx}{dt}} + 2x \cos^2 \theta \frac{dx}{dt}$$

(should be

$$2z \frac{dz}{dt} = 2(h + x \sin \theta) \cdot \frac{dx}{dt} \sin \theta + 2x \cos^2 \theta \frac{dx}{dt} \Bigg)$$

make-up #1

Problem 14 score: 10/10

ok

Problem 16 score: 0/10

NOT ok

$$\frac{dz}{dt} = \frac{(35 \cdot 4 - \underbrace{100}_{L=150}) \cdot 35 + 25 \cdot 4}{\sqrt{(150 - 35 \cdot 4)^2 + 100^2}}$$

⁴similar problems: 40,41

⁵similar problems: 50,46

Problem 18 score: 0/10

NOT ok

$$\frac{dh}{dt} = -LH \frac{1}{(L-x)^2}$$

where is dx/dt ?

Problem 19 score: 10/10

ok

Problem 40 score: 0/10

NOT ok

$$0.007 \cdot \frac{2}{3} \cdot (0.12L^{2.53})^{-\frac{1}{3}} \cdot 0.12 \cdot 2.53 \cdot L^{1.53} \cdot \frac{L_2 - L_1}{\Delta t} \neq 2.872 \cdot 10^{-3} L^{2.26} \cdot \frac{L_2 - L_1}{\Delta t}$$

Problem 41 score: 0/10

NOT ok

$$\begin{aligned} c^2 &= a^2 + b^2 - 2ab \cos \theta \\ 2c \frac{dc}{dt} &= 0 + 0 - 2ab(-\sin \theta) \end{aligned}$$

where is $d\theta/dt$?

Problem 46 score: 10/10

ok

Problem 50 score: 4/10

~~minute~~ – minute

NOT ok – you forgot the minus at the end.