MA166: Recitation 8 Prep

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1 Homework Solutions

Section 1.1: Homework 18

Problem 1.1. The masses m_i are located at the points P_i. Find the moments M_x and M_y and the center of mass of the system.

$$\begin{array}{lll} m_1 = 2, & m_2 = 1, & m_3 = 7; \\ P_1(2,-5), & P_2(-3,1), & P_3(3,5). \end{array}$$

Solution. ☺

Problem 1.2. Sketch the region bounded by the curves, and visually estimate the location of the centroid.

$$y = 4x, \qquad y = 0, \qquad x = 1.$$

Solution. ☺

Problem 1.3. Sketch the region bounded by the curves, and visually estimate the location of the centroid. Find the exact coordinates of the centroid.

Solution. ☺

Problem 1.4. Find the centroid of the region bounded by the given curves.

$$y = 6\sin 5x, \qquad y = 6\cos 5x, \qquad x = 0, \qquad x = \frac{\pi}{20}.$$

Solution. ☺

Problem 1.5. Find the centroid of the region bounded by the given curves.

$$y = x^3, \qquad x + y = 10, \qquad y = 0.$$

Solution. ☺

Problem 1.6. Calculate the moments M_x, M_y and the center of mass of the lamina with the given density and shape.

Solution. ☺

Problem 1.7.

Solution. ☺

Section 1.2: Homework 19

Problem 1.8.

Solution. ☺

Problem 1.9.

Solution. ☺

Problem 1.10.

Solution. ☺

Problem 1.11.

Solution. ☺

Problem 1.12.

Solution. ☺

Problem 1.13.

Solution. ☺

Problem 1.14.

Solution. ☺

Problem 1.15.

Solution. ☺

Problem 1.16.

Solution. ☺

Problem 1.17.

Solution. ☺

Problem 1.18.

Solution. ☺

Section 1.3: Homework 20

Problem 1.19.

Solution. ☺

Problem 1.20.

Solution. ☺

Problem 1.21.

Solution. ☺

Problem 1.22.

Solution. ☺

Problem 1.23.

Solution. ☺

Problem 1.24.

Solution. ☺

Problem 1.25.

Solution. ☺

Problem 1.26.

Solution. ☺

Problem 1.27.

Solution. ☺

2 Past Exam Problems

Problem 2.1.

Solution. ☺