MA166: Solutions to Homework 6-8

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1 Homework 8 Solutions

Problem 1.1 (Stewart §6.4, Exercise 3)**.** A variable force of $5x^{-2}$ pounds moves an object along a straight line when it is x feet from the origin. Calculate the work done in moving the object from $x = 1$ft to $x = 10$ft.

Solution. ■

Problem 1.2 (Stewart §6.4, Exercise 5)**.** Shown is the graph of a force function (in newtons) that increases to its maximum value and then remains constant. How much work is done by the force in moving an object a distance of 8 m?

Solution. ■

Problem 1.3 (Stewart §6.4, Exercise 10)**.** If the work required to stretch a spring 1 ft beyond its natural length is 12 ft-lb, how much work is needed to stretch it 9 in beyond its natural length?

Solution. ■

Problem 1.4 (Stewart §6.4, Exercise 19)**.** An aquarium 2 m long, 1 m wide, and 1 m deep is full of water. Find the work needed to pump half of the water out of the aquarium. (Use the fact that the density of water is $1000\,\mathrm{kg} \cdot \mathrm{m}^{-3}$.)

Solution. ■

Problem 1.5 (Stewart §6.4, Exercise 21)**.**

Solution. ■

Problem 1.6 (Stewart §6.5, Exercise 11)**.**

Solution. ■

Problem 1.7 (Stewart §6.5, Exercise 14)**.**

Solution. ■

2 Homework 9 Solutions

Problem 2.1 (Stewart §7.1, Exercise 1)**.**

Solution. ■

Problem 2.2 (Stewart §7.1, Exercise 3)**.**

Solution. ■

Problem 2.3 (Stewart §7.1, Exercise 10)**.**

Solution. ■

Problem 2.4 (Stewart §7.1, Exercise 17)**.**

Solution. ■

Problem 2.5 (Stewart §7.1, Exercise 27)**.**

Solution. ■

Problem 2.6 (Stewart §7.1, Exercise 37)**.**

Solution. ■

Problem 2.7 (Stewart §7.1, Exercise 62)**.**

Solution. ■

3 Homework 10 Solutions

Problem 3.1 (Stewart §7.2, Exercise 1)**.**

Solution. ■

Problem 3.2 (Stewart §7.2, Exercise 7)**.**

Solution. ■

Problem 3.3 (Stewart §7.2, Exercise 11)**.**

Solution. ■

Problem 3.4 (Stewart §7.2, Exercise 17)**.**

Solution. ■

Problem 3.5 (Stewart §7.2, Exercise 23)**.**

Solution. ■

Problem 3.6 (Stewart §7.2, Exercise 24)**.**

Solution. ■

Problem 3.7 (Stewart §7.2, Exercise 35)**.**

Solution. ■

Problem 3.8 (Stewart §7.2, Exercise 61)**.**

Solution. ■