(9/30/08)

Math 10B. Lecture Examples.

Section 8.5. Applications to physics[†]

Example 1 **A man sliding a box exerts a force of $20 - 3\sqrt{s}$ pounds when the box is at s (feet) on an s-axis. How much work does he do when he moves the box from $s = 0$ to $s = 9$?**

Answer: [Work] = 126 foot-pounds

Example 2 **A woman pushing her stalled car exerts a force of $400(1 + s)^{-1/2}$ newtons on it when she has pushed it s meters. The engine starts and she stops pushing it when she has pushed 24 meters. How much work does she do pushing the car?**

Answer: [Work] = 3200 newton-meters (joules)

Example 3 **A boy rolling a large boulder exerts $10 + 5 \sin s$ pounds of force on it when he has rolled it s feet. How much work does he do in rolling it 30 feet?**

Answer: [Work] $= 305 - 5\cos(30) \doteq 304.23$ foot-pounds

Interactive Examples

Work the following Interactive Examples on Shenk's web page, http//www.math.ucsd.edu/~ashenk/:[‡]

Section 7.9: Examples 1–4

[†]Lecture notes to accompany Section 8.5 of *Calculus* by Hughes-Hallett et al

[‡]The chapter and section numbers on Shenk's web site refer to his calculus manuscript and not to the chapters and sections of the textbook for the course.