

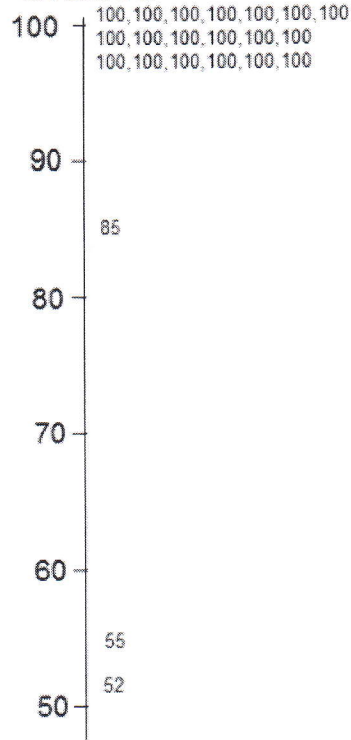
PHYS 211 College Physics I

Exam 4B

November 8, 2017

Name J. C. Daly

Grades



1. The breaks of a truck cause it so slow by applying a retarding force of 4.5×10^3 N to the truck over a distance of 884 m.

a. What is the work done by this force on the truck? 3,978,000 J

b. Is the work positive or negative? Negative

$$W = F \Delta \cos \theta = -4.5 \times 10^3 \times 884$$

$$W = -3.978 \times 10^6 \text{ J}$$

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2. If electricity costs 14 ¢ per kilowatt-hour. What does it cost per month to leave a 40 watt light bulb on continuously? Assume a 30 day month.

\$4.03

$$40 \text{ Watts} * \frac{1 \text{ kW}}{10^3 \text{ W}} = .040 \text{ kW}$$

$$30 \text{ days} * \frac{24 \text{ hr}}{\text{day}} = 720 \text{ hr}$$

$$\text{Energy} = .040 * 720 = 28.8 \text{ kW}\cdot\text{hr}$$

$$28.8 \text{ kW}\cdot\text{hr} * 0.14 \frac{\$}{\text{kW}\cdot\text{hr}} = \$4.032$$

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Gas Station



Figure 3

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3. Jimmy McFearless is cruising along at 25 m/s when he runs out of gas as he approaches the hill shown in Figure 3. The height of the hill, H , is 20 meters.

Neglecting friction, can he coast up the hill and reach the gas station?

Yes No

Justify your answer.

$$KE \stackrel{?}{>} PE$$

$$\frac{1}{2}mv^2 > mgh$$

$$v^2 > 2gh$$

$$(25)^2 > 2 \times 9.8 \times 20$$

$$625 \stackrel{?}{>} 392$$

yes

The Kinetic Energy at the bottom of the hill is greater than the potential energy at the top of the hill.