



Welcome back, Bill Wiecking

>>Working in AP Physics B (SC651)

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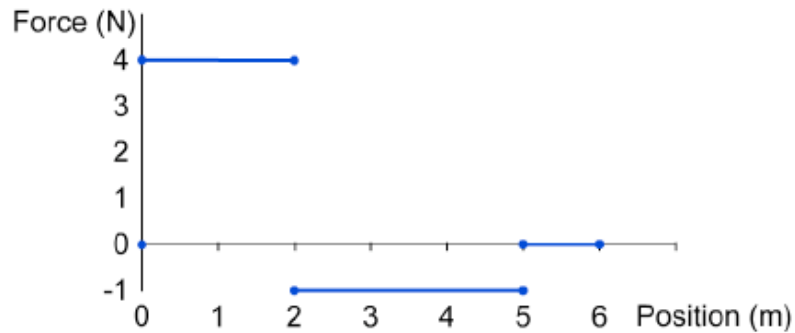
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ch 7 exam

Chapter 7: Work, Energy and Power

Section 3: Work done by a variable force

7.3.1 The graph shown describes a certain force that is exerted on an object, as a function of the position of the object. How much work is done by this force as the object moves from the position 0.0 m to 6.0 m? (5.00)



J

Section 6: Kinetic energy

7.6.4 A 0.50 kg cream pie strikes a circus clown in the face at a speed of 5.00 m/s and stops. What is the change in kinetic energy of the pie? (5.00)

J

Section 7: Work-kinetic energy theorem

7.7.1 A net force of 1.6×10^{-15} N acts on an electron over a displacement of 5.0 cm, in the same direction as the net force. (a) What is the change in kinetic energy of the electron? (b) If the electron was initially at rest, what is the speed of the electron? An electron has a mass of 9.1×10^{-31} kg. (5.00)

(a) J

(b) m/s

Section 12: Power

7.12.2 Stuntman's Freefall, a ride at Six Flags Great Adventure in New Jersey, stands **(5.00)** 39.6 meters high. Ignoring the force of friction, what is the minimum power rating of the motor that raises the 1.20×10^5 kg ride from the ground to the top in 10.0 seconds at a constant velocity?

W

Section 20: Sample problem: conservation of energy

7.20.1 A spring has its right end fixed and is installed on a horizontal table so that **(10.00)** the free end, in equilibrium, is at $x = 3.00$ m. A 1.65 kg block coming from the left slides along the table. When it passes the origin, it is moving at 5.58 m/s. It strikes the spring, compresses it momentarily, and is then sent back toward the left, where it eventually comes to rest at the point $x = 1.50$ m. The coefficient of kinetic friction between the block and the table is 0.300. By what distance was the spring compressed?

m

Additional problems

7.A.10 Lance Armstrong bikes at a constant speed up the *Alpe d'Huez*, a famous **(7.00)** mountain pass. Assume his teammates do such a good job riding ahead of him that he can draft behind them and encounter no air resistance. This climb is described as "beyond classification" in terms of its difficulty. The climb is 13.8 km long at a 7.9% average grade (the grade, as a decimal, is the tangent of the angle of inclination). Assume that the combined mass of Lance and his bicycle is 83 kilograms. What is the magnitude of the work he does against the force of gravity?

J

7.A.12 Lamborghini states that its 2004 Murciélago® has a mass of 1650 kg. On a **(7.00)** particular test run, its 580 hp (433 kW) engine accelerates the car from 0 to 100 km/h (62 mph) in 3.60 seconds. Assume the engine is working at its maximum power. How much energy is consumed by dissipative forces like air resistance and friction as the car accelerates from 0 to 100 km/h?

J

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