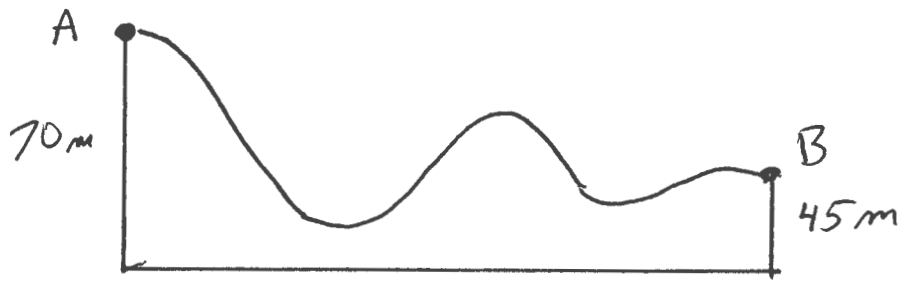
Physics 113-01 (10 am)
October 30, 1996
Test 2

Name: _____

If any question is unclear, *please* ask immediately. Be sure to show your work **clearly** and **draw a box around your answer**. Partial credit may be given for work *if* it can be understood. All answers must have the correct units.

1. (10 pts.) A polar bear of mass 220 kg starts at point A with an initial speed 8 m/s and slides down the frictionless hilly path to point B. How fast is the polar bear moving when it reaches point B?



Physics 113-01 (10 am)
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Test 2

Name: SOLUTIONS

If any question is unclear, *please* ask immediately. Be sure to show your work **clearly** and **draw a box around your answer**. Partial credit may be given for work *if* it can be understood. All answers must have the correct units.

1. (10 pts.) A polar bear of mass 220 kg starts at point A with an initial speed 8 m/s and slides down the frictionless hilly path to point B. How fast is the polar bear moving when it reaches point B?

$$E_i = E_f$$

$$U_i + K_i = U_f + K_f$$

$$mgy_i + \frac{1}{2}mv_i^2 = mgy_f + \frac{1}{2}mv_f^2$$

$$g(y_i - y_f) + \frac{1}{2}v_i^2 = \frac{1}{2}v_f^2$$

$$\sqrt{2\left[g(y_i - y_f) + \frac{1}{2}v_i^2\right]} = v_f$$

Note only change matters!

$$\sqrt{2\left[9.8(25) + \frac{1}{2}(64)\right]} = v_f$$

$$\boxed{23.5\ m/s = v_f}$$