

### Physics 1214, Homework #4: solutions

Answers to multiple choice questions: M1: B; M2: C.

P1:  $v = \sqrt{gL \sin \theta} = 1.2 \text{ m/s}$

P2:  $a = \frac{\sin(\alpha - \theta)}{\cos \alpha} = 1.76 \text{ m/s}$

P3:  $T$  satisfies

$$T^2 - \frac{mv^2}{L}T - (mg)^2 = 0$$

Positive solution:  $T = 9.7 \text{ N}$

P4:  $v = \sqrt{\frac{8}{3} \frac{\rho_{\text{sphere}} r g}{D \rho_{\text{air}}}} = 117 \text{ m/s}$