

Physics 2425 - Dr. Terry Honan

■ Test 3 - A - Answers

Problem 1 (i) yes (ii) no (iii) + (iv) 0 (v) +

Problem 2 (a) $\langle 1.186, 1.667 \rangle \times 10^{-6}$ N (b) $2.63 \times 10^{-4} \frac{\text{m}}{\text{s}}$ (c) 30.1 AU

Problem 3 (a) 7.16 s (b) $v = 0.302$ m/s and $a = 0.853$ m/s² (c) $\sqrt{2gh / (1 + \frac{M}{2m})}$ (d) 0.973 gal (e) 2/3 s

Problem 4 (a) 1949 °F (b) 3.40 s

Problem 5 (a) $m g \frac{L}{2x \sin \theta}$ (b) $\frac{3}{2} \frac{g}{L}$ (c) $\sqrt{3gL}$

■ Test 3 - B - Answers

Problem 1 (i) + (ii) 0 (iii) +

Problem 2 (a) (0.5 m, 0.8 m) (b) 35 kg · m²

Problem 3 (a) -0.18 m/s and 0.22 m/s (b) $\langle 255, 75 \rangle$ N

Problem 4 (a) $v = 0.937$ m/s and $a = 17.5$ m/s² (b) 4.36 m/s (c) 0.288 Hz (d) 2/5 (e) $\langle -60, -40, 0 \rangle$ kg · m² / s

Problem 5 (a) Thumb: 8 W, Fingers: 9 W (b) 8.32 rad/s

Problem 6 (a) 3.56 times (b) $v = 0.45$ m/s and $a = 0.383$ m/s² (c) 0.108 N · m