Phys 206 – Fall 2019

All *University Physics* Sections

Exam I

Short answer

A) a) $\alpha = 45°$ [LO 2.1, 3.1]

b) $\vec{A} \times \vec{B} = -2\sqrt{2}\,\hat{k}$ [LO 2.2, 2.3]

B) a) $\Delta\vec{r} = \frac{1}{3}bt_2^3\,\hat{j}$ [LO 8.1, 14.1, 15.1]

b) $\vec{a}(t) = 2bt\,\hat{j}$ [LO 8.2, 14.2, 15.2]

C) a) $\vec{v}_{p/g} = \frac{x}{t}\hat{i} + \frac{y}{t}\hat{j}$ [LO 1.1, 11.1, 11.2]

b) $\vec{v}_{a/g} = \frac{x}{t}\hat{i} + (\frac{y}{t} - v_{p/a})\hat{j}$ [LO 1.2, 20.1 ,20.2]

Problem 1: a) $a(t) = -10$ m/s^2; Yes, it is constant [LO 8.3, 12.1, 15.3]

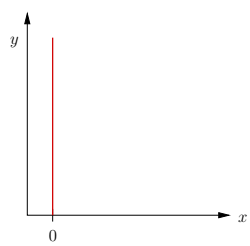
b) $t_{\text{stop}} = 5$ s [LO 3.2, 6.1, 8.4, 12.2]

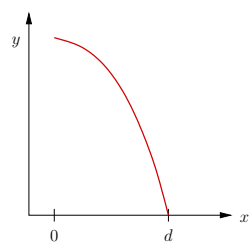
c) $v_f = +40$ m/s $\hat{i}$ [LO 3.3, 5.1, 10.1, 14.3]

d) "first to the right, and later to the left" [LO 13.1]

Problem 2: a) $v_y = -(100 \text{ m/s})\hat{j}$ [LO 6.2, 13.4, 14.4, 20.2]

b) [LO 9.1, 9.2, 14.5, 20.4]

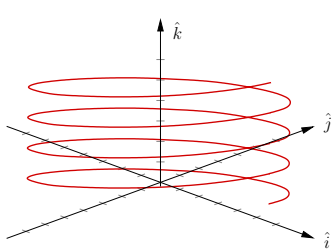




c) $t = 20$ s [LO 3.4, 10.2, 12.3, 14.6, 15.4]

d) $d = 2$ km [LO 10.3, 10.4, 14.7, 15.5]

Problem 3: a) [LO 6.3, 16.1]



b) $v_{xy} = \frac{2\pi R}{T}$ [LO 11.3, 19.1]

c) $\theta = \tan^{-1}\left(\frac{v_z T}{2\pi R}\right)$ [LO 1.3, 3.5, 13.3, 16.2]

d) $a_{\text{tot}} = \frac{4\pi^2 R}{T^2}$ [LO 3.6, 12.4, 13.4, 16.3, 18.1, 19.2]