

Final exam - Spring 2018

I could not find solutions to Final 2017. Please drop by my office if you need help.

Problem ①

$$\dot{Y} = -10.26 \text{ m/s}, \dot{\theta} = +0.75 \text{ rad/s}, \ddot{Y} = -21.483 \text{ m/s}^2, \ddot{\theta} = +0.025 \text{ rad/s}^2$$

Problem ②

$$b) \vec{v}'_A = 2.24 \text{ m/s} \rightarrow, \vec{v}'_B = 0.448 \text{ m/s} \leftarrow$$

Problem ③

$$a) \vec{v}_A = 1.624 \text{ m/s} \uparrow$$

$$b) \vec{v}'_C = 1.276 \text{ m/s} \uparrow$$

$$c) \text{distance} = 0.571 \text{ m}$$

Problem ④

$$a) \omega_{\text{disk}} = 22.39 \text{ rad/s} \text{ ccw}, \alpha_{\text{disk}} = 175 \text{ rad/s}^2 \text{ ccw}$$

$$b) \vec{v}'_C = 0, \vec{a}'_C = 50.131 \hat{i} + 86.83 \hat{j} \text{ m/s}^2$$

Problem ⑤

$$\alpha = 6.21 \text{ rad/s}^2 \text{ ccw}$$

Problem ⑥

cart under translation and rod in general planar motion