Physics 218 – Exam II

Part 1: (a) None of these
(b) $0$ (zero)
(c) $1 \text{ m/s}^2$
(d) When the sum of all external forces on the system is zero.

Part 2: (a)

\[ \mu_{k,A} = \frac{a_1}{g} \]

\[ \mu_{k,B} = \frac{m_3(g - a_3) - m_1a_1 + m_2a_3}{g(m_1 + m_2)} \]

Part 3: (a) $d = 1.72 \text{ m}$
(b) yes, $1.76 \text{ m}$

Part 4: (a) $U(x) = +\alpha/x$
(b) $v_f = \sqrt{v_i^2 + 2\alpha \left( \frac{1}{x_i} - \frac{1}{x_f} \right)}$
(c) $W = \alpha \left( \frac{1}{x_i} - \frac{1}{x_f} \right)$

Part 5: (a) $v = 0.34 \text{ m/s}$
(b) Elastic since $K_i = K_f = 0.675 \text{ J}$