

**Quiz #7: Work and Kinetic Energy**

**Problem 1** (2 points)

Two equal-mass pucks on frictionless ice are pushed towards each other by two equal but opposite forces. Is the total work on both pucks positive, negative, or zero?

- a) positive
- b) negative
- c) zero



**Problem 2** (2 points)

Two position vectors are given by  $\vec{A} = (5.00 \text{ m})\hat{i} - (2.00 \text{ m})\hat{j} - (3.00 \text{ m})\hat{k}$  and  $\vec{B} = (3.25 \text{ m})\hat{i} - (6.0 \text{ m})\hat{k}$ . What is the scalar product of  $(3\vec{A}) \cdot \vec{B}$ ?

**Problem 3** (5 points)

The figure below shows three forces applied to a 5.0 kg trunk that moves *leftward* by 3.00 m over a frictionless floor. The force magnitudes are  $F_1 = 5.00 \text{ N}$ ,  $F_2 = 9.00 \text{ N}$ , and  $F_3 = 3.00 \text{ N}$ , and the indicated angle is  $\theta = 60.0^\circ$ . During the displacement, (a) What is the net work done on the trunk by all forces (including the normal force and gravity)? (b) If the trunk was initially at rest, what is its final speed after being displaced 3.00 m?

