1. (4 pts) Be sure your name, section, date, and “EF 151 Exam 2” is written on your equation sheet. You must turn the equation sheet in with your exam.

2. (10 pts) Dr. Parang (170 pounds) is riding on an amusement park ride that travels up and down. He is sitting on a scale that reads 130 pounds. Determine the magnitude and direction (up or down) of his acceleration. (FBD=KD required)

3. (14 pts) A box of iPads is being pushed across the floor with an acceleration of 2.0 ft/s^2 to the right. Determine the coefficient of kinetic friction. (FBD = KD required)

4. (14 pts) A tennis ball is launched from the ground. It reaches a maximum height of 42 ft above the ground where its speed is 29 ft/s. Determine the initial speed of the tennis ball. (Neglect air resistance, assume level ground)

5. (14 pts) A duck wants to swim across a river, starting at point A and ending at point B. The duck can swim at 3.0 ft/s in still water, and the river is flowing with a speed of 3.2 ft/s in the direction shown. What heading (angle θ) should the duck take?

To receive full credit, a separate vector diagram (with arrows) must be drawn with all vectors labeled and known magnitudes and angles shown. Use these subscripts: d = duck, r = river, g = ground.
6. (14 pts) Derek Dooley is pulling a U-Haul trailer loaded with his buyout money. Determine the weight of the trailer.
- SUV weight: 5000 lb
- SUV tractive force: 1200 lb forward
- Coupling force between the SUV and trailer: 400 lb
- SUV air resistance force: 200 lb
(Must complete both FBD=KD diagrams below)
(Hint: start with the SUV to find the acceleration)

7. (14 pts) A box rests without sliding on an incline as shown. Determine the magnitude of the friction force on the box.
(FBD required)

8. (4 pts) Draw a FBD = KD of this projectile in flight. Include the air resistance force. Use the supplied coordinate system and leave the mass*acceleration vectors as components.

9. (4 pts) Lazydog weighs 60 lb on earth. What is his mass on Jupiter where g=81.4 ft/s²?

10. (4 pts) Chris is walking north at 2 m/s on a moving sidewalk that is moving north at 5 m/s. Daniel is running south on the ground at 6 m/s. What is the velocity of Daniel with respect to Chris?
(Show your work and be sure to include the direction)