first two letters of last name

Physics 7B - Winter 07 - Quiz 5

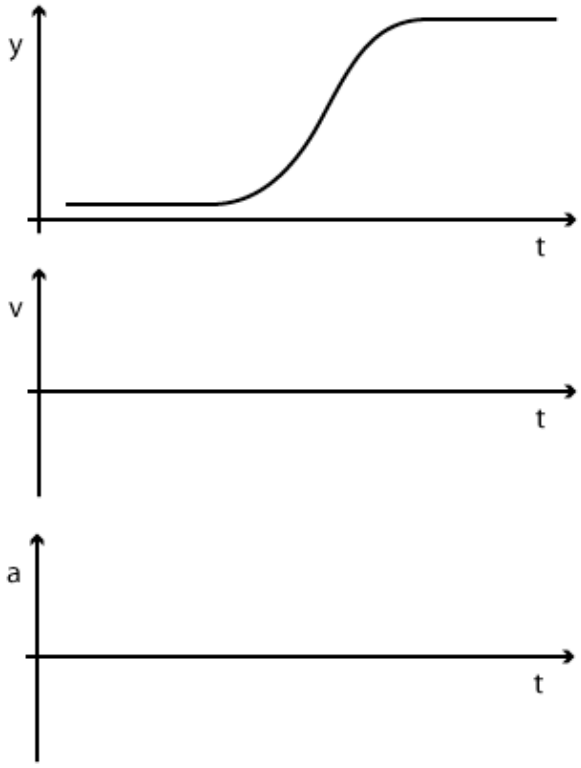
Name_____ Student ID_____

DL section number _____

I certify by my signature that I will abide by the code of academic conduct of the University of California Signature _____

No books or notes. Calculators OK. Show all of your work below - answers alone do not receive credit!

1. (3.0 pts) An elevator starts on the first floor and goes up two floor to the third, coming to rest. The vertical position y of the elevator as a function of time is indicated on the graph at the right. Draw as accurately as you can the velocity v and acceleration a versus time curves on the graphs.



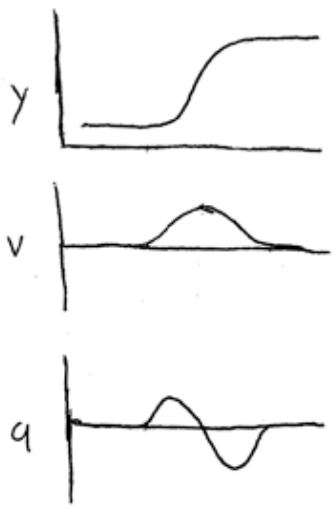
2. (1.5 pts) A box with mass 30 kg rests on the floor of an elevator. a) If the force of the box on the floor is 270 N, what is the state of motion of the elevator? b) If the elevator comes to rest, what is the force of the floor on the box? (For both of these questions, use + to indicate the upward direction, and - to indicate the downward direction, and assume the acceleration of gravity is -10 m/s^2.)

Quiz 5 Rubric

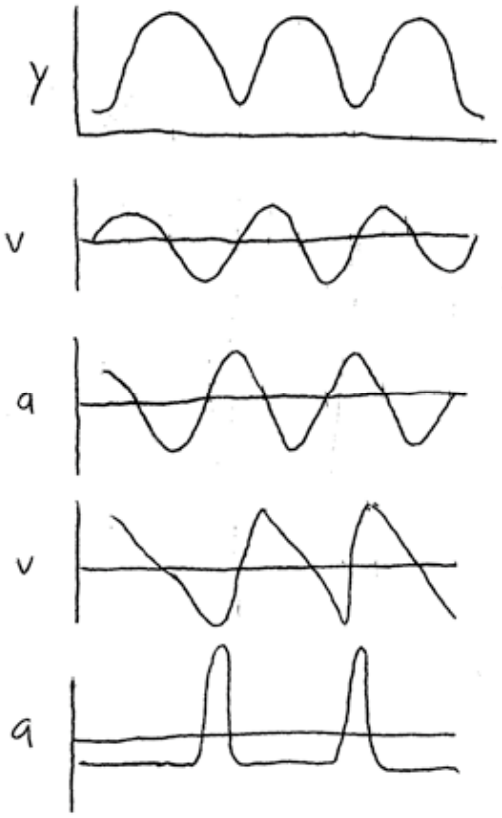
1. When I say below that zeros are in the correct place, they must align properly with the maxima and minima of the graph above them.

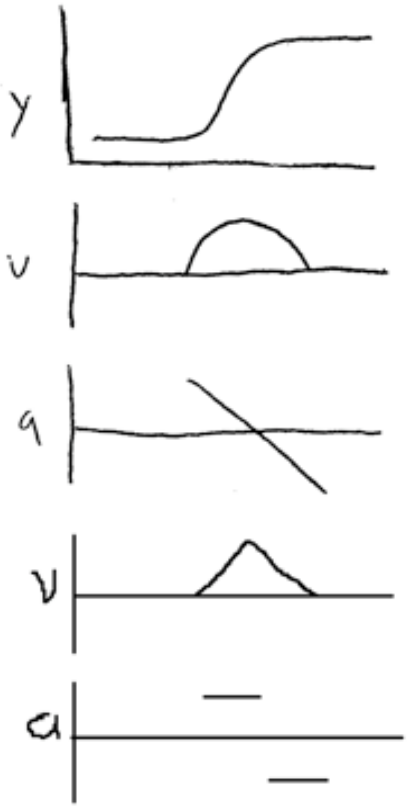
   velocity graph:
   Q. (2.0) Correctly Drawn, No Discontinuities. Examples of Q answers are shown below. Note that for a Q, it is important that your velocity graph agrees with your acceleration graph. Also note that for the second case, two sort of different answers were accepted.
   R. (1.8) Close, but the graph has minor discontinuities/kinks, minor alignment issues, the beginning of the graph is slightly incorrect, or it is somewhat incomplete. Examples of R answers are below.
   S. (1.5) Major Discontinuities, poor alignment, flipped, but for the most part correct.
   T. (1.0) Most of the zeros are in the right place, and most of the graph is basically in the correct half of the y-plane.
   U. (0.7) Decent amount of zeros in the right place.
   V. (0.3) Roughly the correct shape.
   X. (0.1) Wrong
   Z. (0.0) Nothing

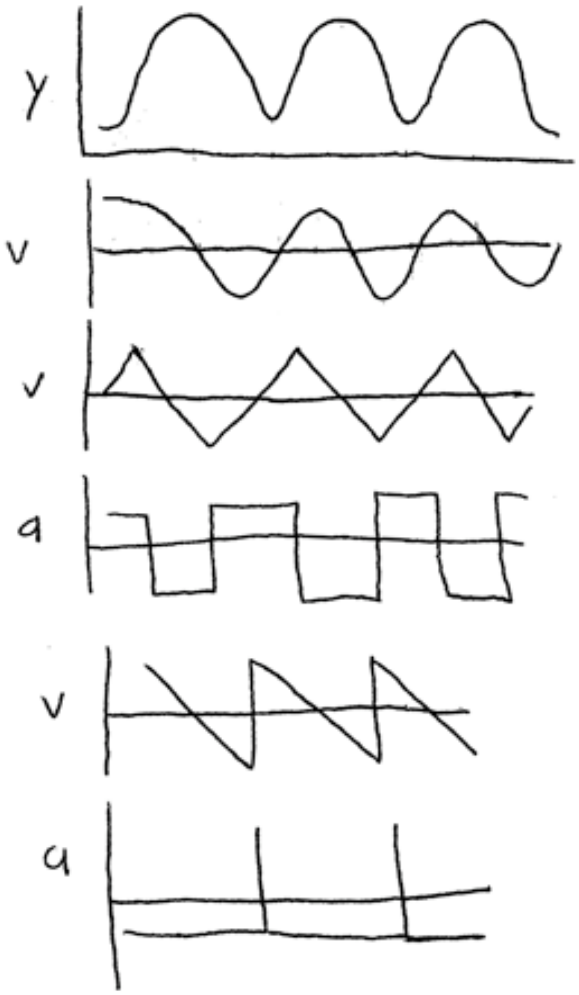
Quiz version 1



Quiz version 2







1. acceleration graph:

Q. (1.0) Correctly Drawn, No Discontinuities. Note that for a Q, it is important that your velocity graph agrees with your acceleration graph. Also note that for the second case, two sort of different answers were accepted.

R. (0.9) Close, but the graph has minor discontinuities/kinks, minor alignment issues, the beginning of the graph is slightly incorrect, or it is somewhat incomplete. Basically correct for the velocity graph you drew.

S. (0.8) Major Discontinuities, poor alignment, flipped, but for the most part correct.

T. (0.5) Most of the zeros are in the right place, and most of the graph is basically in the correct half of the y-plane.

U. (0.3) Decent amount of zeros in the right place.

V. (0.2) Roughly the correct shape.

X. (0.1) Wrong

Z. (0.0) Nothing

2. a) Note that there were two versions of the quiz. If yours said the force of the box on the floor was 270, the correct answer was that the elevator was accelerating down (a = -1 m/s^2). If yours said the force of the box on the floor was 330, the correct answer was that the elevator was accelerating up (a = +1 m/s^2). We can only say the direction that the elevator is **accelerating**, not the direction that the elevator is moving.

Q. (1.0) Correct value for a, correct units, and in the correct direction. Makes it clear that the elevator is **ACCELERATING** in the correct direction. Does not say anything like, "The elevator is moving/going up/down" which we do not know.

S. (0.9) (Note that this letter is out of order. Sorry for the confusion, but it is not a typo) Same as Q, except that the correct value of a was not clearly shown (a = +/- 1)

R. (0.85) Correct value for a, in the correct direction. Says something like, "The elevator is moving/going up/down." The stated direction must be in the direction that acceleration should be (up for 330, down for 270)

T/U. (0.8) Same as R, except that the correct value of a was not clearly shown (a = +/- 1)

V. (0.5) Correct value for a, but in the wrong direction.

W. (0.4) Wrong direction.

X. (0.1) No clear statement about the motion.

Z. (0.0) Nothing.

2 b) Q. (0.5) +300N

R. (0.3) -300N

X. (0.1) Wrong

Z. (0.0) No Answer.