Graphs of Motion

For each of the following sketch:

* A position vs. time graph
* A velocity vs. time graph
* An acceleration vs. time graph

Assume standard conventions for + and – directions.

1. A yellow car is travelling to the right at constant speed.

2. A blue car is travelling left at constant speed.

3. A green car is travelling to the right and speeding up.

4. A red car is travelling to the left and speeding up.

5. A silver truck is travelling left and slows to a stop.

6. A black SUV is travelling right and slows to a stop.

7. A white sedan is travelling left and slows down to a constant non-zero velocity.

8. A potato is dropped from the top of a building.

9. A car is travelling north and speeding up. Then a narwhal leaps into the road in front of the car and the driver accelerates steadily to a stop.

10. A truck is moving left toward a red light and slowing down. Then the light turns green and the truck speeds up.

11. A car is travelling north at constant speed for 2s. Then the car slows down for 4s. The car continues at constant speed for 2s and then speeds up to a speed greater than the initial speed over 3s.

12. A baseball is thrown straight up into the air and allowed to fall back to its starting point.

Graphs of Motion

For each of the following sketch:

* A position vs. time graph
* A velocity vs. time graph
* An acceleration vs. time graph

Assume standard conventions for + and – directions.

1. A yellow car is travelling to the right at constant speed.

2. A blue car is travelling left at constant speed.

3. A green car is travelling to the right and speeding up.

4. A red car is travelling to the left and speeding up.

5. A silver truck is travelling left and slows to a stop.

6. A black SUV is travelling right and slows to a stop.

7. A white sedan is travelling left and slows down to a constant non-zero velocity.

8. A potato is dropped from the top of a building.

9. A car is travelling north and speeding up. Then a narwhal leaps into the road in front of the car and the driver accelerates steadily to a stop.

10. A truck is moving left toward a red light and slowing down. Then the light turns green and the truck speeds up.

11. A car is travelling north at constant speed for 2s. Then the car slows down for 4s. The car continues at constant speed for 2s and then speeds up to a speed greater than the initial speed over 3s.

12. A baseball is thrown straight up into the air and allowed to fall back to its starting point.

13. A cantaloupe is thrown at an angle (above horizontal) off the top of a building. Sketch separate motion graphs for both the vertical and horizontal components of the motion. (6 graphs in all!)

14. Sketch a graph of the horizontal velocity of a pendulum as it swings back and forth.

15. Sketch a graph of the vertical position of a pendulum as it swings back and forth.

16. A ball is rolled up an inclined plane and allowed to return to its initial position.

13. A cantaloupe is thrown at an angle (above horizontal) off the top of a building. Sketch separate motion graphs for both the vertical and horizontal components of the motion. (6 graphs in all!)

14. Sketch a graph of the horizontal velocity of a pendulum as it swings back and forth.

15. Sketch a graph of the vertical position of a pendulum as it swings back and forth.

16. A ball is rolled up an inclined plane and allowed to return to its initial position.