Reminders 9-12-07:

-Worksheet due today.

-Next Homework Due 9/13!!!

-Kinematics Conceptual Questions Due Wed. 9/19.

-<u>Pick up graded papers in basket outside S-107A</u>.

-Sign up for Physics 2X.

-Conceptual <u>Quiz</u> Today 9/12 on 3.1&3.2, 4.1&4.2.

-Next Conceptual Quiz on 9/19 Chapter 2.

-Exam 1 Monday 9/24.

-Save all files onto a USB Stick/Flash Drive.

-Obtain software from desktop of computers in lab.

Objectives:

-Displacement

-Velocity

-Acceleration

-Motion at Constant Acceleration

Physics 2A Old Exams
- Dominic Calabrese -

Sierra College

- Home
- Syllabus
- Labs
- P2X Syllabus
- Old Exams
- Web Assign

Exams

Exam 1

Exam 2

Exam 3

Exam 4

Exam 4 Another Sample

Final Exam

Note: The above sample exams were used in class periods that were 50 minutes in length.

Exam 1 Crib Sheet

Exam 2 Crib Sheet

Exam 3 Crib Sheet

Exam 4 Crib Sheet

Final Exam Crib Sheet

Worksheets (to be assigned)

Worksheet file

Conceptual Questions (to be assigned)

Kinematics

Force

Energy & Momentum

Circular Motion

Fluids

Torque

Heat

Thermodynamics

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| Resources | Phys Dept | Sierra

In the position vs. time graphs below, all the times are in seconds (s), and all the positions are in meter (m). Rank these graphs on the basis of which graph indicates the greatest displacement from beginning t end of motion. Give the highest rank to the one(s) with the greatest displacement, and give the lowe rank to the one(s) indicating the least displacement. If two graphs indicate the same displacement, giv them the same rank. Note: Zero is greater than negative, and ties are possible.
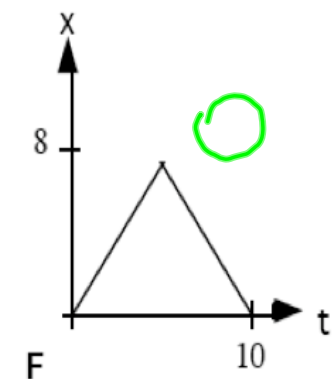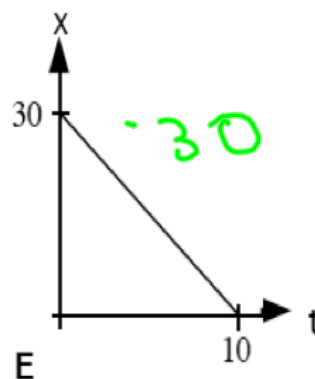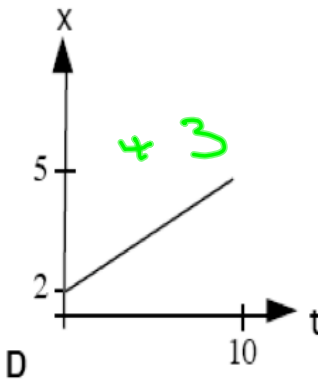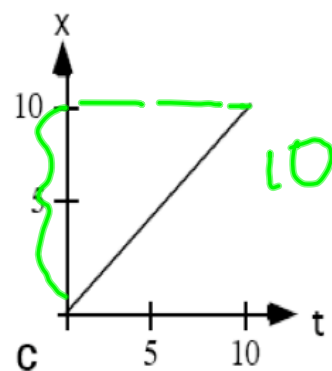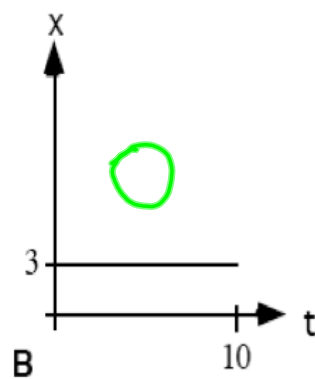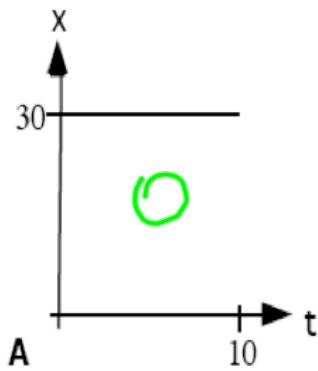
- **An airplane changes its position by 4250 km toward the east in 5 hours.**
    - **What is the airplane's displacement?**
    - **What is its total distance traveled?**
    - **What is the average velocity of the airplane?**
    - **What is the average speed of the airplane?**
    - **How long does it take to fly 6800 km in a straight line?**

$$\vec{\Delta x} = 4250 \text{ km east}$$

$$d \text{ at least } 4250 \text{ km; path not given}$$

$$\vec{V} = \frac{\vec{\Delta x}}{\Delta t} = \frac{4250 \text{ km}}{5 \text{ hr}} = 850 \frac{\text{km}}{\text{hr}} \text{ east}$$

$$s \text{ at least } 850 \frac{\text{km}}{\text{hr}}$$

$$\Delta t = \frac{\vec{\Delta x}}{\vec{V}} = \frac{6800 \text{ km}}{850 \frac{\text{km}}{\text{hr}}} = 8 \text{ hr}$$

- **A person travels 20 miles from city A to city B at an average speed of 30mph and returns back to city A at an average speed of 20mph. What is the average velocity? The average speed for the entire trip is not 25mph? It's 24mph. Why?**

Drive 100 miles to city in 2hrs.
Drive back in 2.5 hrs.

$$S = \frac{200\,mi}{4.5hr} = 44\,mph$$

50 mph to destination
40 mph drive back

$$S = \frac{2d}{t_1 + t_2} = \frac{2d}{\frac{d}{50} + \frac{d}{40}}$$

$$S = \frac{2d}{d\left(\frac{1}{50} + \frac{1}{40}\right)} = \frac{2}{\frac{1}{50} + \frac{1}{40}} = 44$$

- **An 3000kg truck is traveling at 20.0 mph to the right. It then accelerates at a rate of 5.0 mph/s in 10.0s (to the right).**
  - **What is its acceleration in ft/s²?**
  - **What is the speed of the truck after 5.0s?**
  - **What is the net force acting on it?**

$$a = \frac{\Delta v}{\Delta t} = 5.0 \frac{mph}{s} \left(\frac{5280ft}{mi}\right) \left(\frac{hr}{3600s}\right)$$

$$= 7.33 \, ft/s^2$$

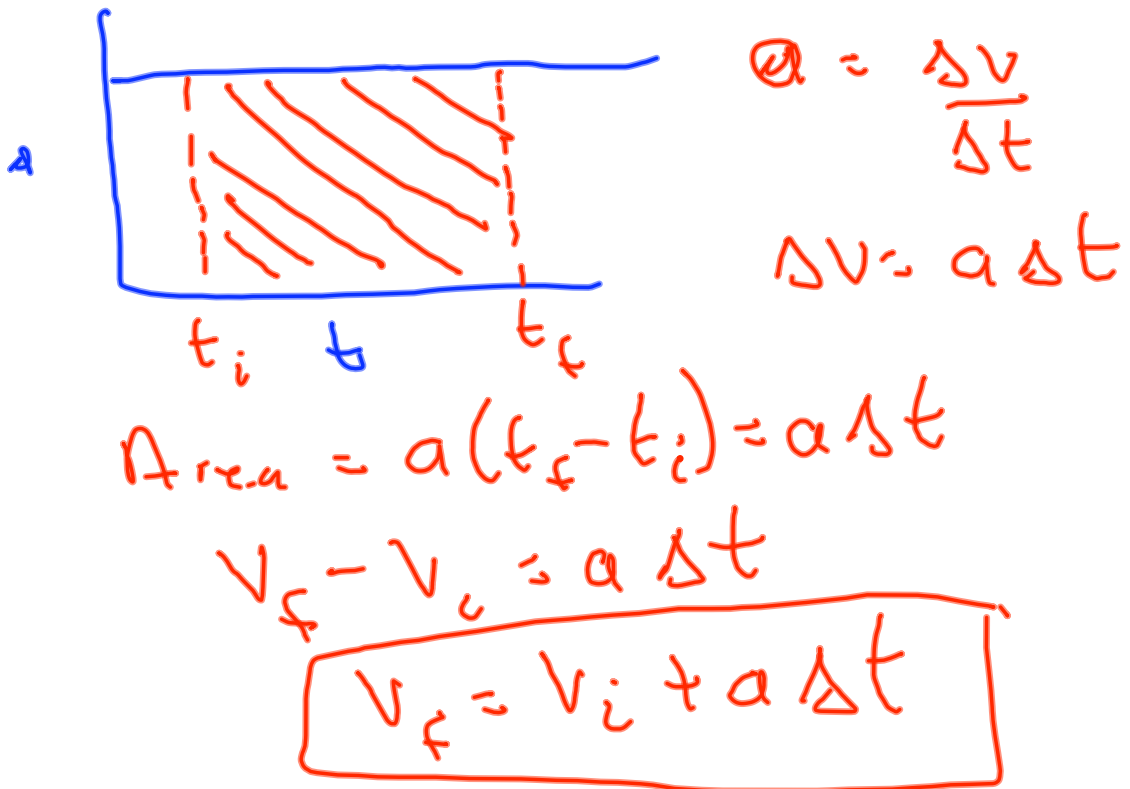$$a = \frac{\Delta v}{\Delta t} \; ; \quad \Delta v = a \Delta t = v_f - v_i$$

$$v_f = v_i + at$$

$$= 20mph + (5.0 \, mph/s)(10s)$$
$$= 70 \, mph$$

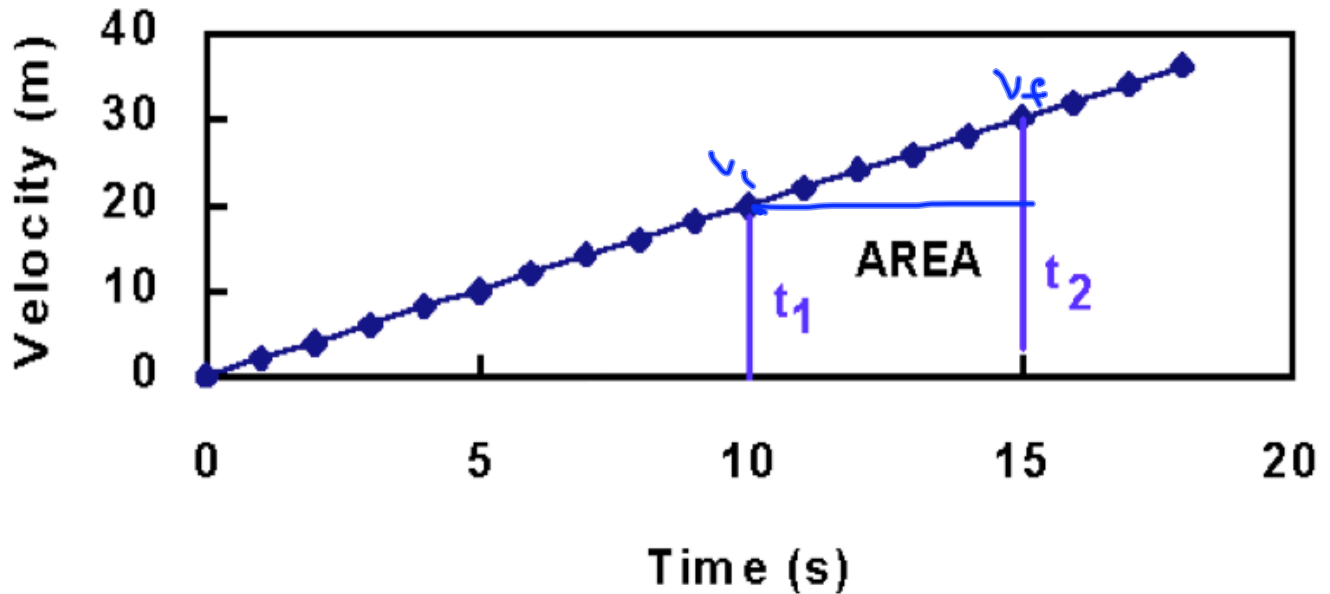$$F_{net} = ma = (3000kg)\left(7.33\frac{ft}{s^2}\right)$$

$$= (3000kg)\left(7.33\frac{ft}{s^2}\right)\left(\frac{.3054m}{1ft}\right)$$

$$= 6700 N$$

$$a = \frac{\Delta v}{\Delta t}$$

$$\Delta v = a \Delta t$$

$$\text{Area} = a(t_f - t_i) = a \Delta t$$

$$v_f - v_i = a \Delta t$$

$$\boxed{v_f = v_i + a \Delta t}$$

$$\text{Rectangle} = v_i(t_2 - t_i)$$

$$T_{\text{Riangle}} = \frac{1}{2}(t_2 - t_1)(v_f - v_i)$$

$$\Delta X = v_i \Delta t + \frac{1}{2} \Delta t(v_f - v_i)$$

$$= v_i \Delta t + \frac{1}{2} \Delta t(a \Delta t)$$

$$= \boxed{v_i t + \frac{1}{2} a(\Delta t)^2}$$