

## Wednesday Workshop Problems for Solution Posting - Week 6

Goals: all group members should understand problem, solution, and steps in between. Group should collaboratively produce a solution which is clear, complete, and correct, shows all steps/reasoning with all steps valid, and that aims to be a document that someone else can learn from.

- Collaboratively produce a public solution on whiteboards.
- Get feedback on how solution might be improved. Revise solution based on feedback. Take a picture of the revised solution.
- Choose a group member to post the solution. Solution must be posted by 11:59 pm tonight. Please follow the detailed instructions from the Solution Postings and Reviews Overview (available at the Week 2 Calendar page).
- You are individually responsible for posting a Review totwo (2) solutions by 6:00 pm Friday. Problem A groups Review Problem B solutions. Problem B groups Review Problem C solutions. Problem C groups Review Problem D solutions. Problem D groups Review Problem A solutions.

A. Based on Exam Question 13 parts c and d.

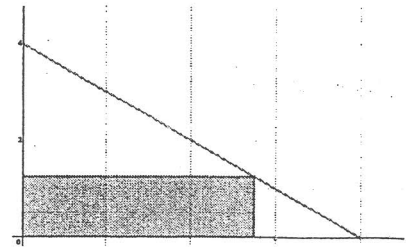
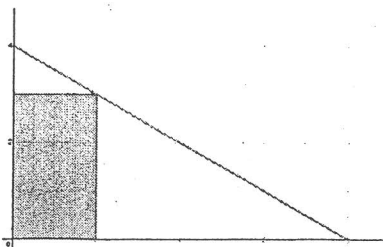
- A motorcycle moving at constant speed 30 m/s on a straight road passes a stationary police car. At that instant, the police car begins to move with constant acceleration  $3 \text{ m/s}^2$  in the same direction as the motorcycle. Determine when the police car catches up to the motorcycle.
- A more accurate scenario might include some time before the police car starts to chase after the motorcycle. Say the police car starts to move with constant acceleration  $3 \text{ m/s}^2$  in the same direction as the motorcycle 5 seconds after the motorcycle passes the police car. Determine when the police car catches up to the motorcycle. Assume the standard time frame is established with time 0 at the moment when the motorcycle first passes the police car.

B. Based on Exam Question 11

- 11.** A motorboat travels 20 miles down the river with the current. When the motorboat returns, it is moving against the current, so it travels 5 miles per hour slower (with respect to the river bank) and the trip takes 2 hours longer.
- Write down an equation or equations that model this scenario. Clearly describe the meaning of any variable you use.
  - Determine the time it takes the boat to make each part of the trip.
  - Determine the speed of the river current.

C. Based on Exam Question 15

- 15.** A rectangle is bound by the x-axis, the y-axis, and the line  $y = 4 - \frac{1}{2}x$ . Some examples are shown. What is the maximum area of such a rectangle?



- D. The angle of elevation to the top of a Building in New York is found to be 10 degrees from the ground at a distance of 1 mile from the base of the building. Using this information, find the height of the building. Round to the tenths. Hint: 1 mile = 5280 feet.