

# WORKSHEET # 16

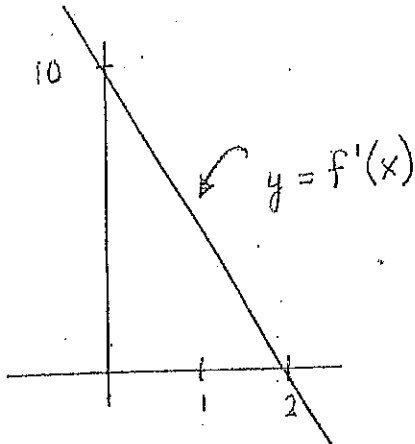
## LESSON # 85 Accumulation

Name \_\_\_\_\_

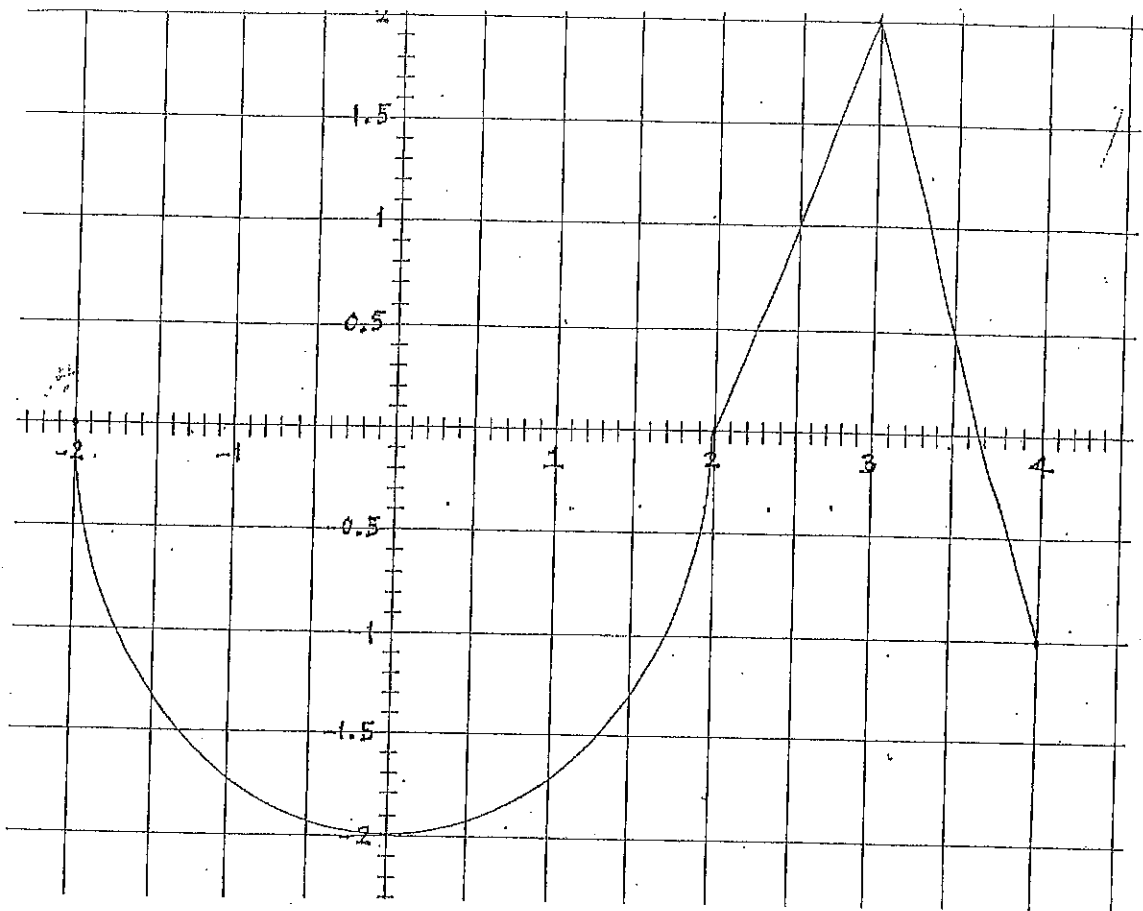
Period \_\_\_\_\_

### Accumulation Problems Homework

1. The graph of  $f'$ , the derivative of  $f$ , is the line shown in the figure. If  $f(0) = 8$ , then  $f(2) = \underline{\quad}$ ?



- 
2. A particle moves along the  $x$ -axis with initial position  $x(0) = 1$ . The Velocity of the particle at  $t \geq 0$  is given by  $v(t) = \sin \sqrt{t}$ . ★calculator  
okay
- A) What is the position of the particle at  $t = 15$  ?
- B) What is the total distance traveled by the particle over the time period  $0 \leq t \leq 15$  ?



The graph of a function  $f$  consists of a semicircle and two line segments as shown. Let  $g$  be the function given by  $g(x) = \int_{-2}^x f(t) dt$ .

a) \_\_\_\_\_

b) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

c) \_\_\_\_\_

d) \_\_\_\_\_

\_\_\_\_\_

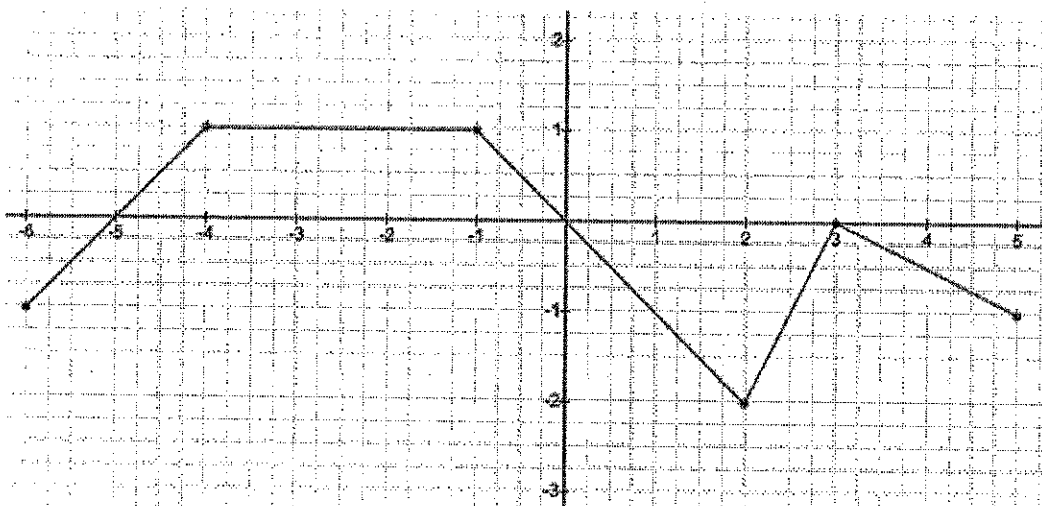
\_\_\_\_\_

a) Find  $g(3)$ .

b) Find all values of  $x$  on the open interval  $(-2, 4)$  at which  $g$  has a relative maximum. Justify your answer.

c) Write an equation for the line tangent to the graph of  $g$  at  $x = 3$  in Point Slope Form.

d) Find the  $x$ -coordinate of each point of inflection of the graph of  $g$  on the open interval  $(-2, 4)$ . Justify your answer.

**Worksheet #17 - Accumulation Practice**

1. The graph above is the graph of  $g'(x)$  on the interval  $[-6, 5]$ . It is known that  $g(0) = 3$ .

A) Find  $g(4)$ .

B) Find  $g(-4)$ .

C) Find the equation of the line tangent to  $g$  when  $x = 2$ .

D) For what interval(s) is  $g$  increasing? Justify.

E) Find the **absolute** maximum value of  $g$  on  $[-6, 5]$ . Explain.

\*calculator  
okay  
on this  
page.

2.

A pizza, heated to a temperature of 380 degrees Fahrenheit (F) is taken out of an oven and placed in an 80 degree F room at  $t = 0$  minutes. The temperature of the pizza is changing at a rate of  $-100 e^{-.3t}$  degrees F per minute. To the nearest degree, what is the temperature of the pizza at time  $t = 6$  minutes?

3.

A particle moves along the x-axis so that at any time  $t > 0$ , its acceleration is given by  $a(t) = \ln(2 + 3^t)$ . If the velocity of the particle is 4 at  $t = 3$ , then the velocity of the particle at time  $t = 5$  is \_\_\_\_\_?

4.

On a certain day, the changes in the temperature in a greenhouse beginning at 12 noon are represented by  $f(t) = \sin\left(\frac{t}{2}\right)$  degrees Fahrenheit, where  $t$  is the number of hours elapsed after 12 noon. If at 12 noon, the temperature is  $95^\circ\text{F}$ , find the temperature in the greenhouse at 5 p.m.

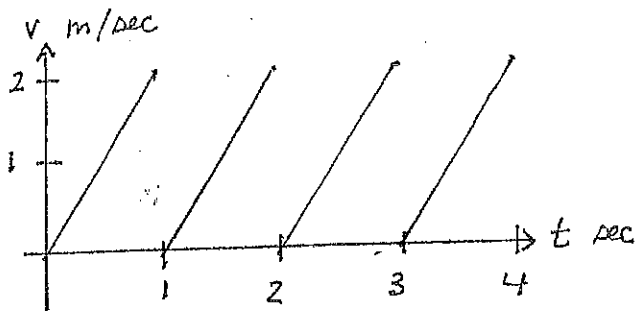
Let  $F(t)$  represent the temperature of the greenhouse.

# WORKSHEET

## LESSON # 8b Accumulation

Name \_\_\_\_\_  
Period \_\_\_\_\_

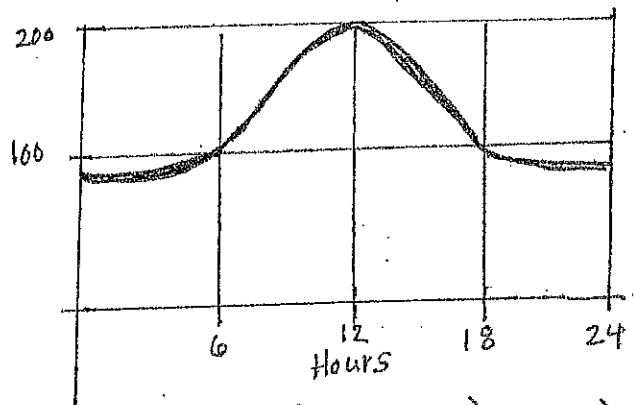
① Graph of the velocity of a particle moving on x-axis is given. The particle starts at  $x=2$  when  $t=0$ .



A) Find where particle is at end of trip.

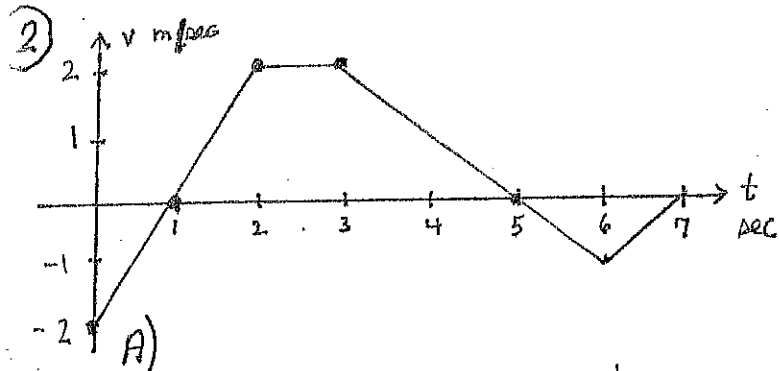
B) Find Total Distance traveled the particle

③ The flow of oil, in barrels per hour, through a pipeline on July 9 is given by graph. Which best approximates the total number of barrels of oil that pass through the pipeline that day?



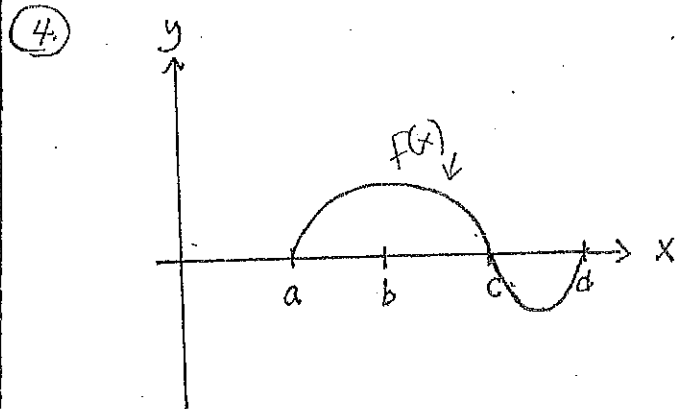
A) 500 B) 600 C) 2400 D) 3000 E) 4800

Same directions as # 1



A) Find where the particle is at the end of the trip.

B) Find Total distance traveled by the particle



The graph of  $f$  is shown. If  $g(x) = \int_a^x f(t) dt$ ,

for what value of  $x$  does  $g(x)$  have a maximum?

A) a B) b C) c D) d  
E) Can not be determined

Unit 8  
Accumulation Practice

- 5) The graph of the velocity function of a moving particle is shown in Figure 13.9-2. What is the total distance traveled by the particle during  $0 \leq t \leq 12$ ?

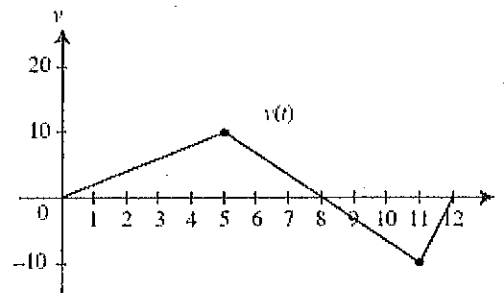


Figure 13.9-2

- 6) If oil is leaking from a tanker at the rate of  $f(t) = 10e^{0.2t}$  gallons per hour where  $t$  is measured in hours, how many gallons of oil will have leaked from the tanker after the first 3 hours?

Calc.  
okay

The change of temperature of a cup of coffee measured in degrees Fahrenheit in a certain room is represented by the function  $f(t) = -\cos\left(\frac{t}{4}\right)$  for  $0 \leq t \leq 5$ , where  $t$  is measured in minutes. If the temperature of the coffee is initially 92°F, find its temperature after the first 5 minutes.

Calc  
okay