

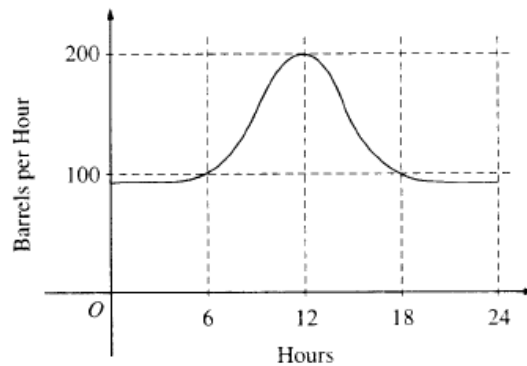
Name \_\_\_\_\_ worked with \_\_\_\_\_

**AB Primer #5**

**SHOW ALL OF YOUR WORK.** Indicate clearly the methods you use because you will be graded on the correctness of your methods as well as the accuracy of your final answers.

**Due Tuesday morning before 1<sup>st</sup> period. Rate of decay = 1/2 point per minute late.**

1.



The flow of oil, in barrels per hour, through a pipeline on July 9 is given by the graph shown above. Of the following, which best approximates the total number of barrels of oil that passed through the pipeline that day?

- (A) 500      (B) 600      (C) 2,400      (D) 3,000      (E) 4,800

2.

If  $f$  is a linear function and  $0 < a < b$ , then  $\int_a^b f''(x) dx =$

- (A) 0      (B) 1      (C)  $\frac{ab}{2}$       (D)  $b - a$       (E)  $\frac{b^2 - a^2}{2}$

3. Find the range of the function  $F(x) = \int_{-4}^x \sqrt{16 - t^2} dt$ .

- (a)  $[-4, 4]$       (b)  $[-4, 0]$       (c)  $[0, 4]$       (d)  $[0, 4\pi]$       (e)  $[0, 8\pi]$

4. A right circular cone has base radius 5 and altitude 12. A cylinder is to be inscribed in the cone so the axis of the cylinder coincides with the axis of the cone. Given that the radius of the cylinder must be between 2 and 4 inclusive, find the value of that radius for which the lateral surface area of the cylinder is a minimum. (Hint: Determine extremas on an interval)

5. Below is the graph of  $f'(x)$  (the derivative of  $f$ ) on the same axis, graph  $f$  and show 1<sup>st</sup> and 2<sup>nd</sup> derivative analysis to support your work.

