

**This assignment is due by 11 am on April 6, 2007** You can turn it in to me in class or drop it by the office, **Blocker 640D**. Be sure that you follow the homework rules, they can be found on your syllabus. Please work the problems in the order that they are listed.

1. Find the indicated areas

(a) The area bounded by  $y = 3 \ln(2x)$  and  $y = x + 0.5$ .

(b) The area between  $y = 5 \cos(x)$  and  $y = x - 4$  for  $0 \leq x \leq 3$ .

2. After a foreign substance is introduced into the blood, the rate at which antibodies are made is given by  $r(t) = \frac{2t}{t^2 + 2}$  measured in thousand of antibodies perminute.

(a) How many antibodies did the body produce in the first two minutes?

(b) How many antibodies did the body produce in the next five minutes?

3. A plane flying 5000 meters above the ground has one of its engines fall off. The downward velocity (in meters/second) of the engine is given by the formula  $v(x) = 49 - 49(0.8187)^x$ .

(a) Write an express of the distance the engine falls in T seconds.

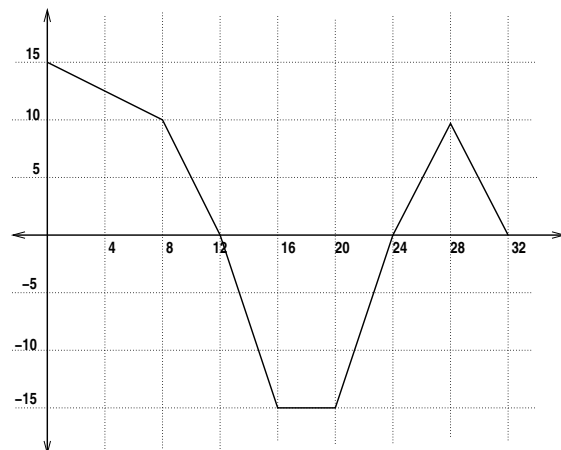
(b) After 20 seconds, how far above the ground is the engine?

(c) How long until the engine hits the ground. Give your answer correct to at least 3 decimal places.

4. Use the graph of  $f'(x)$  and the fundamental theorem of calculus to answer the following questions. Assume that  $f(12) = 100$

(a) Compute  $f(0)$

(b) Compute  $f(32)$



5. find the indefinite integrals

(a)  $\int (6x^2 + 8x - 10) dx$

(b)  $\int (e^{3x} + \frac{5}{x}) dx$

6. find the indefinite integrals

(a)  $\int (x^2 + 5)(x^2 + 4) dx =$

(b)  $\int 8 \cos(2x) + 20 \sin(5x) dx =$