## Fundamental Theorem of Calculus III

1. Evaluate 
$$f'(3)$$
 where  $f(y) = \int_2^y (2x - 3)e^{\sqrt{x^2-3x}} dx$ .

$$g(t) = \int_0^t (4t^2 + t - 28)dt.$$

6. Evaluate 
$$f'(x)$$
 if  $f(x) = \int_{-1}^{x^2} \sin(\sqrt{t}) dt$ .

- 2. On which interval is f increasing where  $f(y) = \int_2^y (2x-3)e^{\sqrt{x^2-3x}}dx.$
- 7. Evaluate f'(x) if  $f(x) = \int_0^{\sqrt{x}} \cos(t^2) dt$ .
- 3. Find the inflection point(s) of f where  $f(y) = \int_{2}^{y} (2x 3)e^{-(x^{2} 3x)} dx.$
- 8. Evaluate f'(x) if  $f(x) = \int_x^{x^2} \sin(\sqrt{t}) dt$ .
- 4. If u(x) = v'(x) and  $v(y) = \int_0^y g'(x)dx$ , find the relationship between the functions u and q.
- 9. Evaluate f'(x) if  $f(x) = \int_{e^{-x}}^{1} \ln(t^2) dt$ .
  - 10. Evaluate f''(x) if  $f(x) = \int_x^{e^x} \ln(t^2) dt$ .
- 5. Find the maximum value of g where

©2012 Shmoop University, Inc. All rights reserved. For classroom use only. Want to print this out for your classroom? Go for it. All other reproduction and distribution is prohibited.