# Fundamental Theorem of Calculus III

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

2. On which interval is $f$ increasing where $f(y) = \int_2^y (2x-3)e^{\sqrt{x^2-3x}}dx$.

3. Find the inflection point(s) of $f$ where $f(y) = \int_2^y (2x-3)e^{-(x^2-3x)}dx$.

4. If $u(x) = v'(x)$ and $v(y) = \int_0^y g'(x)dx$, find the relationship between the functions $u$ and $g$.

5. Find the maximum value of $g$ where $g(t) = \int_0^t (4t^2 + t - 28)dt$.

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

7. Evaluate $f'(x)$ if $f(x) = \int_0^{\sqrt{x}} \cos(t^2)dt$.

8. Evaluate $f'(x)$ if $f(x) = \int_x^{x^2} \sin(\sqrt{t})dt$.

9. Evaluate $f'(x)$ if $f(x) = \int_{e^{-x}}^1 \ln(t^2)dt$.

10. Evaluate $f''(x)$ if $f(x) = \int_x^{e^x} \ln(t^2)dt$.

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