Group Members: _____ _____

_____ _____

Classwork 8

Find the derivative of each.

1. $y = \arctan x^2$

2. $f(t) = \left(ln 7t^5 \right)^3$

3. $y = e^{\sinh x}$

4. $y = ln\left(2x^2 + \sin x\right)$

5. $f(x) = ln\left(ln x^6 \right)$

6. $f(\theta) = ln\sqrt{1 - cos^2 2\theta}$

7. $y = \dfrac{x^2\sqrt{5x^2+4}}{9x^2-2}$
(use logarithmic differentiation)

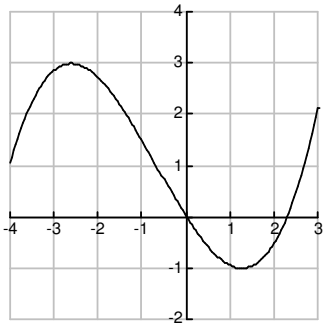
8. $y = ln\left|6x^3 - 5x + 1\right|$

9. $\int_{-2}^{2x^3} \sqrt{5t^2 - 3}\, dt$

10. $\int_{-3}^{\csc x} \sqrt[3]{\left(3t^2+1\right)^2}\, dt$

11. The graph of f is shown in the figure. Let $F(x) = \int_{-4}^{x} f(t)dt$. Find:

Graph of f



a. $F'(1)$

b. Estimate: $\int_{-4}^{1} f(x)dx$

c. Estimate: $\dfrac{d}{dx}\int_{-4}^{x} f(t)dt$ at $x = -2$.

d. Which is larger: F(0) or F(2)? Why?

e. Where is F increasing? Why?

f. Estimate F(-2) and F(2)

12. If $\int_2^5 f(x)dx = 5$ and $\int_4^5 f(x)dx = 2$ find

a. $\int_5^5 f(x)dx$

b. $\int_5^4 f(x)dx$

c. $\int_2^4 f(x)dx$