Calculus - Blizzard Bag #3

Derivatives and Integrals

Write the solutions on a separate sheet of paper.

Calculate y'.

1. $y = \tan^2(\sin\theta)$
2. $y = \dfrac{(x-1)(x-4)}{(x-2)(x-3)}$
3. Find an equation of the tangent to the curve at the given point.

   $y = 4\sin^2 x\ ,\ (\dfrac{\pi}{6},1)$

Evaluate the integral by interpreting it in terms of areas.

4. $\int_0^3 (\frac{1}{2}x-1)dx$
5. $\int_{-3}^0 (1+\sqrt{9-x^2})dx$

Use the Fundamental Theorem of Calculus to find the derivative.

6. $\int_0^x \sqrt{1+2t}\,dt$

Find the general indefinite integral.

7. $\int \sqrt[3]{x}dx$
8. $\int x(1+2x^4)dx$