

Quiz 8

Math 103 - Introduction to Calculus

August 7, 2008

Name: SOLUTIONS

Note: *In order to receive full credit, you must show work that justifies your answer.*

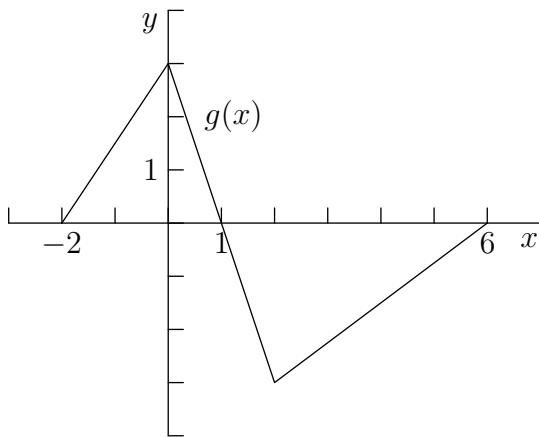
1. If $f'(x) = 6x + 4x^{1/3}$ and $f(1) = 8$, find $f(x)$.

The general antiderivative of $f'(x)$ is $f(x) = 3x^2 + 3x^{4/3} + C$.

Since $f(1) = 8$, we have $f(1) = 3(1)^2 + 3(1)^{3/4} + C = 8$, so $C = 2$.

Thus, $f(x) = 3x^2 + 3x^{4/3} + 2$.

2. The graph below of $g(x)$ consists of straight line segments. Find $\int_{-2}^6 g(x) dx$.



The integral $\int_{-2}^6 g(x) dx$ is the area under $g(x)$ above the x -axis minus the area above $g(x)$ below the x -axis.

By computing areas of triangles, $\int_{-2}^6 g(x) dx = \frac{1}{2}(3)(3) - \frac{1}{2}(5)(3) = -3$.