

## Math 231 Worksheet 7

1. Find  $f$  if  $f'(x) = x^2 - \sin x$  and  $f(0) = 0$ .

2. A particle is moving with the data

$$a(t) = 2, \quad s(0) = \frac{1}{6}, \quad s(1) = \frac{1}{6}.$$

(a) Find the position function  $s(t)$ .

(b) Find the displacement of the particle during the time interval  $0 \leq t \leq 1$ .

(c) Find the distance traveled during the time interval  $0 \leq t \leq 1$ .

**Answers:**

1.  $f(x) = \frac{x^3}{3} + \cos x - 1$

2. (a)  $f(x) = x^2 - x + \frac{1}{6}$  (b) 0 (c)  $\frac{1}{2}$

## Math 231 Worksheet 7b

1. Find the most general antiderivative of the function.

(a)  $f(x) = \sqrt{x}(1 - x)$

(b)  $f(x) = \frac{x^2 - 2x + \sqrt{x}}{x}$

2. Find the function  $f$  that satisfies

$$f''(t) = \sin t, \quad f(0) = 0, \quad f'(0) = 1.$$