Name _____

- You have 20 minutes

1. (3 points) Find the most general antiderivative of

$$f(t) = \frac{5 - 2t^2 + 7t^3}{\sqrt{t}}$$

2. (3 points) Evaluate the antiderivative

$$\int \sqrt{x} \, \sin\left(2 + x^{3/2}\right) \, dx.$$

3. (4 points) You are standing on an alien planet. On this planet, the acceleration due to gravity is unknown (say, $a = -x$ meters/sec^2). You throw a rock straight up into the air at a velocity of 5 meters/sec from your height of 2 meters, and you notice that it takes 2 seconds to reach the ground. What is the acceleration due to gravity (i.e., what is x)?