Review Problems for Math 151 Final

1. A rocket ship blasts off from earth with acceleration function given by $a(t) = 3t^2 + 4t + 2$. Assume that it launches from a height of 0 meters and is initially at rest. Find the height of the rocket at time $t = 10$ seconds.

2. Find the area in the plane enclosed by the curves $y = x^2$ and $y = 10 - 3x$.

3. Compute $\int x^2 \sin(x^3)\, dx$.

4. Let $h(x) = \int_x^{2x} e^{t^2}\, dt$. Find $h'(x)$.

5. Compute $\int (x-2)\sqrt{x+4}\, dx$.

6. Find the area enclosed by the curves $y = x^3$, $y = 8$ and $x = 0$.

7. Write out, but don't compute $R_C(12)$, the Riemann approximation for $\int_0^6 (x^2+1)\, dx$ using 12 rectangles using the center point of the intervals.

8. [Note: this topic is not on your final exam] You invest 100 in a bank account that pays 3% interest. If it is compounded continuously compute how long it will take for your money to triple. An expression for the time is fine, you do not need an exact answer.