**Test #1**

MAE 478, Spring 2017

**Date:** Thursday, February 9, 2017 during class (12:30pm-1:45pm).

**Test Rules:**

1. You will be allowed to use your calculator during this test.
2. You will be allowed to create and use a one-page crib sheet during the test in order to write down important formulas or notes. If you want to write additional notes or programs into your programmable calculator, that is also acceptable. I will write the test such that you will be able to complete the exam in the time allotted with just a regular scientific calculator without any special programs.
3. Talking/texting is prohibited.
4. The test will conclude exactly at 1:45pm. I will start picking up tests at that time.

**Test Hints:**

1. You should be able to solve problems involving converging-diverging nozzles.
2. You should be able to solve problems involving the design of a solid rocket motor case.
3. You should be able to solve problems relating to burn rate and pressure.
4. You should understand the assumptions involved in an ideal rocket nozzle vs. a real rocket nozzle.
5. You should be able to classify each of the missiles discussed in the missile of the day handouts. (E.g. are they air-to-air, anti-tank, ground-to-air, etc.).
6. You should understand the various parts of liquid rocket engines and solid rocket motors.
7. You should be able to discuss the different liquid engine cycles and the various advantages and disadvantages of each.