Instructions:

- Put name and section on your exam.
- Put seating label on your equation sheet.
- Do not open the test until you are told to do so.
- Write your final answers in the boxes provided
- If you finish with less than 5 minutes remaining, please stay seated until the exam is over.
- Stop work immediately when time is over; working after time is over results in an automatic point deduction
- Turn in your equation sheet with your examination.
- Pass exams to the aisle; stay seated until all exams are collected.

Guidelines:

- Assume 3 significant figures for all given numbers unless otherwise stated
- Show all of your work – no work, no credit
- Include units for all answers
- Include directions for all vectors

<table>
<thead>
<tr>
<th>Time</th>
<th>111 Front</th>
<th>111 Back</th>
<th>Est 209</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:10</td>
<td>S1a Tyler</td>
<td>S1b Tayler</td>
<td>S1c Rachel</td>
</tr>
<tr>
<td>12:40</td>
<td>S2a Tyler</td>
<td>S2b Tayler</td>
<td>S2c Rachel</td>
</tr>
<tr>
<td>2:10</td>
<td>S3a Tyler</td>
<td>S3b Tayler</td>
<td>S3c Rachel</td>
</tr>
</tbody>
</table>
1. (2 pts) Lazydog runs in the park with a velocity of +7 m/s and an acceleration of –1.1 m/s². Lazydog is:
   A. Speeding up
   B. Slowing Down
   C. Cannot tell from the given info

2. (2 pts) A vector is drawn as shown:

   The y component of the vector is expressed as:
   
   A. +32 lb * sin 47°
   B. +32 lb * cos 47°
   C. -32 lb * sin 47°
   D. -32 lb * cos 47°

3. (6 pts) An Olympic sized swimming pool has a length of 50 m and a width of 82 ft. Find the area of the pool in square Hendersons.
   1 Henderson = 5 feet 11 inches
   1 m = 3.28 ft

4. (6 pts) Tayler walks 100 ft forward in 10 sec, 50 ft backward in 12 sec, and 100 ft forward in 19 sec. What is her average speed for the total walk?
5. (14 pts) Determine the magnitude and direction of $\mathbf{A} - \mathbf{B} + \mathbf{C}$.
   \[ \mathbf{A} = (-3i + 2j) \text{ m} \]
   \[ \mathbf{B} = (+6j) \text{ m} \]
   \[ \mathbf{C} = (4i - 7j) \text{ m} \]

6. (14 pts) Rachel programs her robot to travel the following path: 1) 100 m due North, 2) 300 m due E, and 3) 200 m 20° W of S. How far and in what direction does the robot need to travel to get back to the starting point?
7. (14 pts) The vectors shown are in equilibrium. What is the magnitude of vector \( \mathbf{B} \)?

8. (14 pts) Coach Tim Hall (UT sprint coach) tries out a new sprint workout. Starting from rest, he runs 50 m at an acceleration of +2.5 m/s\(^2\) and then runs 80 m at a constant acceleration until he comes to a stop. What is the total time of Coach Hall’s sprint workout?
9. (14 pts) Tayler and Rachel are standing on platforms above the ground, as shown. Tayler throws a ball up in the air. The ball passes Rachel at 1.2 sec and then hits the ground at 1.5 seconds. Neglecting air resistance, how high is Rachel’s platform above the ground?
10. (14 pts) Based on the following graphs:
If the position at 10 sec is 30 ft and the velocity at 20 sec is 8 ft/s, what is the velocity at 10 sec and the position at 20 sec?
(If you cannot find the velocity at 10 sec, assume it to be 4 ft/s in order to solve for the position.)