Your Name

Your Signature

Student ID #

	Charlie		Jonathan	
Section	11:30	12:30	11:30	12:30
(circle one)	CA	CB	CC	CD

Problem	Total Points	Score
1	13	
2	13	
3	12	
4	12	
Total	50	

- This exam is closed book. You may use one $8\frac{1}{2} \times 11$ sheet of notes.

- Do not share notes.

- You may use a calculator, but it must be a Texas Instruments TI-30X IIS.

- In order to receive credit, you must show your work. Do not do computations in your head or only on your calculator. Instead, write them out on the exam paper.

- **Place a box around** $\boxed{\text{YOUR FINAL ANSWER}}$ **to each question.**

- If you use a trial and error (or guess and check) method when an algebraic method is available, you will not receive full credit.

- If you need more room, use the backs of the pages and indicate to the reader that you have done so.

- Raise your hand if you have a question.

1 (12 points)   Let $f(x) = x^2 - 5x$ and $g(x) = |3 - 2x|$

(a) (7 points)   Simplify the expression $\dfrac{f(x+h) - f(x)}{h}$ far enough so that plugging in $h = 0$ would be allowed.

(b) (6 points)   Find all solutions to the equation $g(x) = 3x - 7$.

2 (13 points)   Clovis and Isobel are standing on Broadway, 30 feet South of the intersection with Aloha St. Clovis starts walking North at a constant rate of 5 feet/second. When he reaches the intersection, he turns West and continues at the same speed down Aloha St. Isobel does not move.

(a) (7 points)   Give a multi-part function for the distance between Clovis and Isobel as a function of time. Use units of feet and seconds.

(b) (6 points)   When are they 50 feet apart?

3 (12 points) Tafu is sailing near a radar buoy which can detect anything within 9 km of the buoy. He starts sailing from a point 7 km West and 11 km North of the buoy. He sails South for one hour, then turns and sails East for 30 km.

He sails at a constant speed of 6 km/hr.

How much time was he within 9 km of the buoy?

4 (12 points)   Winfield is moving linearly in the xy-plane at a constant speed. He starts from the point $(3, -1)$ and moves along the line $y = -2x + 5$ at a speed of 3 units per second, heading toward the y-axis.

(a) (6 points)   Write parametric equations for Winfield's location t seconds after starting.

(b) (6 points)   At what time is Winfield closest to the origin?