MATH 131

LECTURE _____

MIDTERM 2

NAME: _____

For each problem make your steps clear and **box** your final answer.

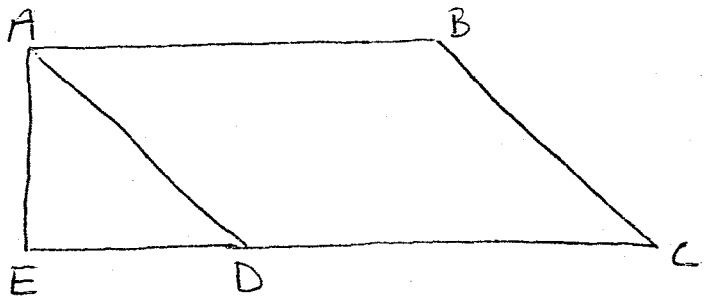
Problem	Points Earned
1	
2	
3	
4	
5	
6	
Total	

1. State the Parallel Cuts Theorem, then state its converse. Include a diagram.
   Note: If you cannot remember the theorem, give an example of the *converse* of a statement for partial credit.

2. Prove the area formula for an obtuse triangle.

3. A right triangle has one leg of length a. The hypotenuse of the triangle is twice as long as the other leg. Find the length of the hypotenuse in terms of a.

4. In the figure below, $ABCD$ is a parallelogram, ΔAED is a right triangle, $BC = x$, AB is twice as long as BC, and $\angle DAB = 45°$. Find the area of $ABCE$.



5. Prove: Opposite sides in a parallelogram are equal. (Begin with *only* the definition of a parallelogram as your given information.)

6. True or False. For each problem, say whether the statement is true or false. In either case, give justification of your answer. Credit will not be given without justification.

   (a) If two *similar* polygons have sides that scale with the ratio 1:2, then their areas also scale with the ratio 1:2.

   (b) A right triangle with irrational sides can be similar to a primitive Pythagorean triple.