

**MATH 231**  
**Quiz 3**

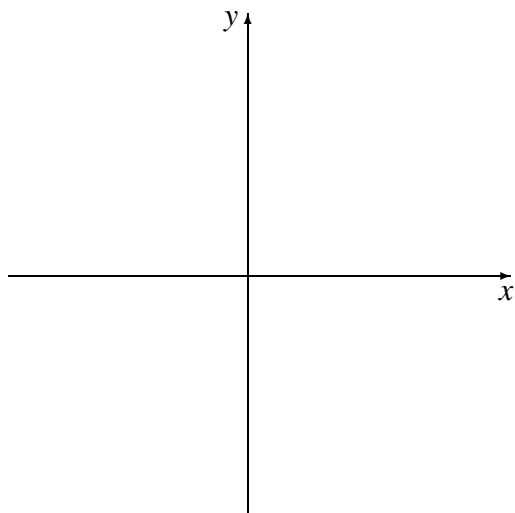
Name \_\_\_\_\_  
**September 18, 2001**

WRITE CLEARLY AND SHOW ALL YOUR WORK. YOU MAY USE A CALCULATOR. EACH PROBLEM IS WORTH 4 POINTS.

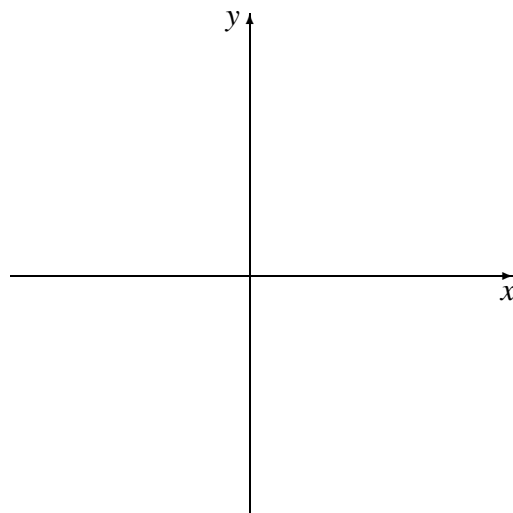
1. Use induction to prove the following is true for all positive integers  $n$ :

$$2 + 4 + 6 + \cdots + 2n = n(n + 1).$$

2. Sketch, if possible, the graph of a function with domain  $\mathbb{R}$  that has each of the characteristics listed on its entire domain.



concave up and decreasing.



concave down and decreasing.

MORE →

3. If  $f(x) = (x + 1)^2$ , find  $f(x + h)$ .

4. Sometimes it is convenient to use an equation of the form  $Ax + By + C = 0$  to describe a linear function. Find, in terms of  $A$ ,  $B$ , and  $C$ , the

(a) slope.

(b) y-intercept.

5. Write the function  $f(x) = |5 - 3x|$  as a piecewise function where each piece is defined on an interval of  $x$ -values.