Math 1113 Test 2
Fall 1999, Dr. Howard

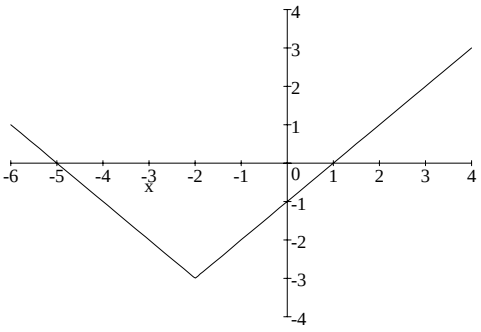
**Name**: _____

**Please show all work and justify your answers writing neatly and legibly**.

**1**. Find an equation of the line passing through the point ( 1, 3) with slope 2.

**2**. Sketch the graph of the quadratic equation $y = x^2 - 4x + 3$. Make sure you indicate all x-intercepts, all y-intercepts, and the vertex.

**3**. Give a formula for the function whose graph is depicted below.




**4**. If $f(x) = \frac{1}{x}$ and $g(x) = \frac{x}{x-3}$, find a formula for the product $f \bullet g$ and give its domain.

**5**. Let $f(x) = 3x + 5$ and $g(x) = x^3 - 2$. Evaluate $(f \circ g)(1)$.

**6**. Find functions $f$ and $g$ such that $h = f \circ g$ given that $h(x) = (2 - 3x^2)^4$.

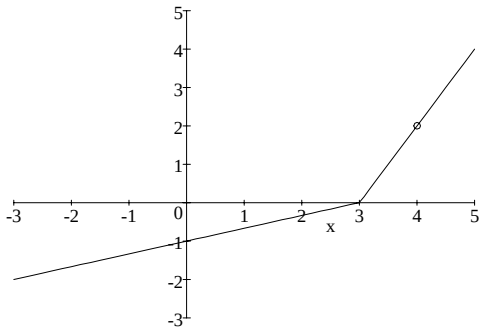
**7**. The function $f(x) = x^2 - 4$ with domain = $(-\infty, \infty)$ is NOT a 1-1 function.

**a**. Determine a subset of this domain on which $f$ is 1-1.

**b**. Find a formula for the inverse of $f$ on the restricted domain determined in part a.

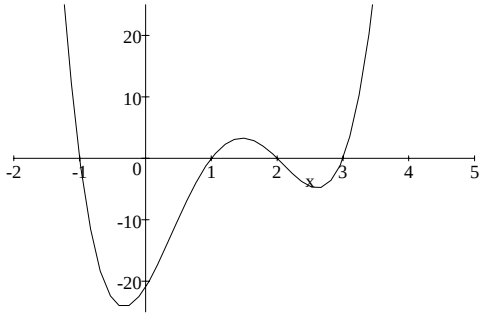
**c**. Identify the domain and range of the inverse function from part b.

**8**. The graph of a 1-1 function is given below. On the same coordinate axes, sketch the graph of its inverse function.




**9**. A polynomial $P(x)$ has a zero of multiplicity one at $x = 2$ and a zero of multiplicity two at $x = -1$. It has the property that $P(x) \to \infty$ as $x \to \infty$ and $P(x) \to \infty$ as $x \to -\infty$. What is the minimum degree of $P(x)$?

**10**. Determine the lowest possible degree for the polynomial graphed in the figure below.



**11**. The graph of $y = f(x)$ is provided in the figure below. Using the same coordinate axes, sketch the graph of $y = f(-x)$.