

Problem 1 (10 points)

Which one of these lines is NOT parallel to either of the other two? Explain.

A. $6x - 3y = 1$

B. $y = 2x - 5$

C. The line through (0,4) and (5,0).

Problem 2 (10 points)

Given that $x > 9$, simplify $|x - 3| + |5 - x|$ into a form that does not involve absolute value.

Problem 3 (9 points)

Find the domain of each function. Write each answer in interval notation.

• $f(x) = x^2 + 3x$

• $g(x) = \sqrt{x^2 - 9}$

• $h(x) = \frac{x+2}{(x-1)(x+3)}$

Problem 4 (12 points)

Let $f(x) = 2x^2 - x$. Simplify the following expression until it no longer has a denominator:

$$\frac{f(x+h) - f(x)}{h}$$

Problem 5 (10 points)

Exactly how far is it from (3,1) to (2,5)?

Problem 6 (9 points)

Consider the equation $x^3 + y^2 = 1$. With or without drawing a graph, explain your answers to the following:

Is the graph of this equation symmetric with respect to the x -axis? Yes / No

Is the graph of this equation symmetric with respect to the y -axis? Yes / No

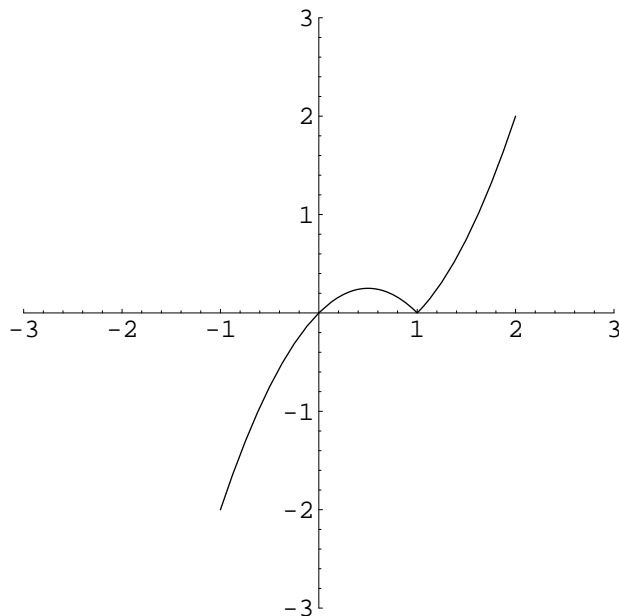
Is the graph of this equation symmetric with respect to the origin? Yes / No

Problem 7 (10 points)

What is the average rate of change of $y = x^2 + 2$ on the interval $[-2, 1]$?

Problem 8 (10 points)

Here is a portion of the graph of $y = f(x)$. On the same set of axes, sketch a graph of $y = f(-x) + 1$.



Problem 9 (10 points)

Let $f(x) = x - 2$, $g(x) = 3x - 1$.

Find $(f \circ g)(x)$ and $(g \circ f)(x)$. Are they equal?

Problem 10 (10 points)

With f and g defined as in Problem 9, let $h = f/g$. Find $h^{-1}(x)$. Do you notice anything unusual about it?