

Math 203: HW 1

Due on Wednesday, May 23

Summer '13

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Problem 1

Let $P_1 = (1, 3)$ and $P_2 = (-2, 5)$. Give the equation of the line that "hits" P_1 and P_2 .

Problem 2

Graph $g(x) = x^2$. Include the coordinates of at least 3 points. Let $f(x) = (x - 3)^2 + 2$. Explain what vertical and horizontal shifts we must apply to $g(x)$ to get $f(x)$. Graph $f(x)$ and give the coordinates of the vertex.

Problem 3

Let $f(x) = x^2 + 2x - 1$ (this is also a parabola).

Hint: Complete the square (look this up if you forgot, then $f(x)$ will look more like Problem 2) and graph $f(x)$.

Problem 4

Find two points on the graph of $f(x) = \frac{1}{x}$ with positive x coordinates, and give the equation of the secant line.

Problem 5

Let

$$f(x) = \frac{x + 1}{x^2 - x - 2}$$

- a) Simplify $f(x)$. (Hint: Factor the denominator.)
- b) Explain how to graph $f(x)$ by shifting the function $\frac{1}{x}$, give the coordinates of the hole.

Problem 6

Let $f(x) = x^2$.

- a) What is $f(x + h)$?
- b) Simplify

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

(Note this is called the difference quotient) .