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Score: _____ /15

Homework 4 (Due Fri, May 16)

Math 1060Q – Summer 2014 Professor Hohn

Answer the following questions. Three questions will be chosen randomly to be graded.

1. Find the slope of the line that contains the points (3, 4) and (7, 13).

2. Find a number m such that the line containing the points (m, 4) and (-2, 9) has slope -3.

3. Find the equation of the line in the xy-plane that contains the point (3, 2) and this is parallel to the line y = 4x - 1.

4. Find the equation of the line that contains the point (2,3) and that is parallel to the line containing the points (7,1) and (5,6).

5. Find the intersection in the xy-plane of the lines y = 5x + 3 and y = -2x + 1.

6. Find the intersection in the xy-plane of the lines 2x + 3y = 1 and y = -2x + 1.

7. Find the equation of the line in the xy-plane that contains the point (4, 1) and that is perpendicular to the line y = 3x + 5.

8. Find the equation of the line in the xy-plane that contains the point (-2, 4) and that is perpendicular to the line y = 9x - 1.

9. Where does the line in the xy-plane given by the equation

$$\frac{x}{4} + \frac{y}{3} = 1$$

intersect the x-axis? The y-axis?

10. Suppose a and b are nonzero real numbers. Where does the line in the xy-plane given by the equation

$$\frac{x}{a} + \frac{y}{b} = 1$$

intersect the x-axis? The y-axis?

11. Let $f(x) = 2x^2 - 16x + 8$.

(a) Write f(x) in the form $a(x-h)^2 + k$.

- (b) Find the value of x where f(x) attains its minimum or maximum value.
- 12. Let $f(x) = 5x^2 + 10x + 15$.
 - (a) Write f(x) in the form $a(x-h)^2 + k$.

- (b) Find the value of x where f(x) attains its minimum or maximum value.
- 13. Let $f(x) = x^2 \frac{x}{3} + 1$. (a) Write f(x) in the form $a(x - h)^2 + k$.

- (b) Find the value of x where f(x) attains its minimum or maximum value.
- 14. Let $f(x) = 2x^2 + 5x + 1$.
 - (a) Write f(x) in the form $a(x-h)^2 + k$.

- (b) Find the value of x where f(x) attains its minimum or maximum value.
- 15. Show that every constant linear function is not a one-to-one function.

16. Suppose that a = 0 or b = 0. Show that $(a + b)^2 = a^2 + b^2$.

17. Suppose that $(a + b)^2 = a^2 + b^2$. Show that a = 0 or b = 0.