Name: $\qquad$

Score: $\qquad$ /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 $x y$-plane that contains the point $(3,2)$ and this is parallel to the line $y=4 x-1$.
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 $x y$-plane of the lines $y=5 x+3$ and $y=-2 x+1$.
6. Find the intersection in the $x y$-plane of the lines $2 x+3 y=1$ and $y=-2 x+1$.
7. Find the equation of the line in the $x y$-plane that contains the point $(4,1)$ and that is perpendicular to the line $y=3 x+5$.
8. Find the equation of the line in the $x y$-plane that contains the point $(-2,4)$ and that is perpendicular to the line $y=9 x-1$.
9. Where does the line in the $x y$-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 $x y$-plane given by the equation

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

intersect the $x$-axis? The $y$-axis?
11. Let $f(x)=2 x^{2}-16 x+8$.
(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 $f(x)=5 x^{2}+10 x+15$.
(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 $f(x)=2 x^{2}+5 x+1$.
(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 $b=0$.

