

NAME: _____

DATE: _____

COORDINATE GEOMETRY

PERIOD: _____

How Do You Graph a Nonlinear Equation? (Topic #3)

An equation whose graph is a straight line is called a _____.

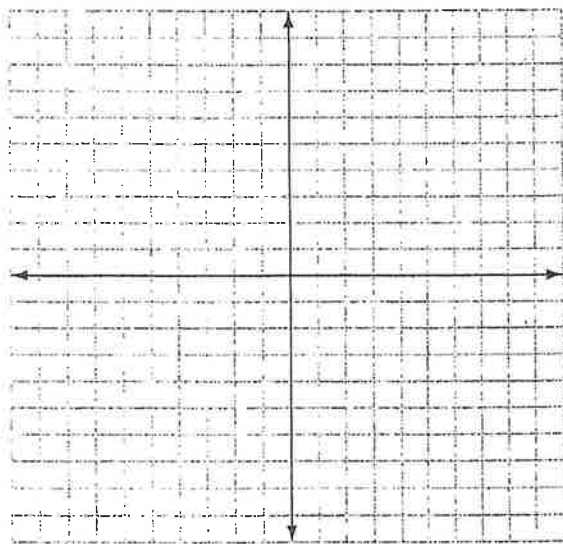
Any equation in the form $y = mx + b$, such as $y = 3x + 4$, is a _____ line. For this reason, $y = 3x + 4$ is defined as a linear equation.

Not all equations are linear. The graph of a nonlinear equation is not a straight line. Many ordered pairs are needed to graph a nonlinear equation.

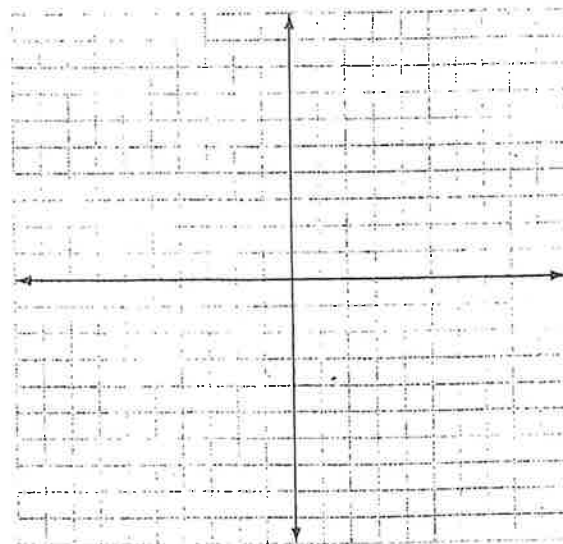
Nonlinear Equations

EXAMPLES: Graph the following equations.

a) $y = x^2$



b) $y = -2x^2 + 1$



- An equation with a variable raised to the second power is called a _____ .
- The graph of a quadratic equation is a _____ called a _____

That opens upward or downward.

How Do You Graph a Nonlinear Equation? (Topic #3)

An equation whose graph is a straight line is called a linear equation.

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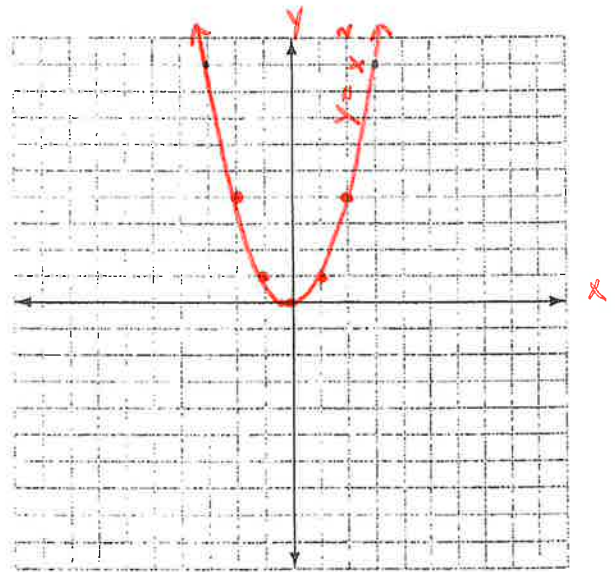
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Nonlinear Equations

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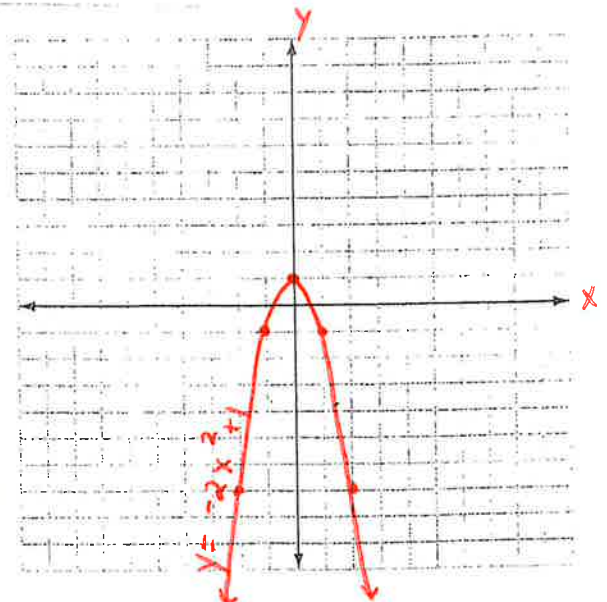
a) $y = x^2$

x	$y = x^2$	y	(x, y)
-2	$y = (-2)^2$	4	(-2, 4)
-1	$y = (-1)^2$	1	(-1, 1)
0	$y = (0)^2$	0	(0, 0)
1	$y = 1^2$	1	(1, 1)
2	$y = 2^2$	4	(2, 4)



b) $y = -2x^2 + 1$

x	$y = -2x^2 + 1$	y	(x, y)
-2	$y = -2(-2)^2 + 1$	-7	(-2, -7)
-1	$y = -2(-1)^2 + 1$	-1	(-1, -1)
0	$y = -2(0)^2 + 1$	1	(0, 1)
1	$y = -2(1)^2 + 1$	-1	(1, -1)
2	$y = -2(2)^2 + 1$	-7	(2, -7)



- An equation with a variable raised to the second power is called a quadratic equation
- The graph of a quadratic equation is a U-shape called a parabola

That opens upward or downward.