

LESSON 2: WHAT IS A LINEAR FUNCTION?

1) SORTING GRAPHS

Graph the following equations using a graphing calculator. Sort each equation according to the pattern of the graph that results from the equation.

$-y = 7 - 2x$

$-y = x^2$

$-y = 3x + 5$

$-y = 5 + 3x$

$y = 1/x$

$-y = 4x - 3$

$-y = 6 - 2x^2$

$-y = x - 4$

$-y = x^3 - 1$

$-y = 8 + (3x)/2$



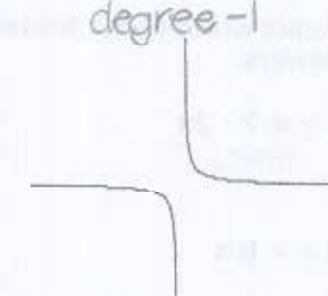
$-y + x^2 = -3x$


$2xy = 1$

$-y - 4 = 5x$

$-y = -x^3$

$-y - x^2 + 1 = 0$

<p>degree 2</p>  <p>$y = x^2$</p> <p>$y = 6 - 2x^2$</p> <p>$y + x^2 = -3x$</p> <p>$y = x^2 + 1 = 0$</p>	<p>degree 3</p>  <p>$y = x^3$</p> <p>$y = x^3 - 1$</p> <p>$y = -x^3$</p>	<p>degree -1</p>  <p>$y = 1/x$</p> <p>$y = \frac{1}{2}x$</p>
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<p>$y = x$</p> <p>degree 1</p>	<p>LINEAR GRAPHS</p> 	<p>$y = 7 - 2x$</p> <p>$y = 3x + 5$</p> <p>$y = 5 + 3x$</p> <p>$y = 4x - 3$</p> <p>$y = x - 4$</p> <p>$y = 8 + \frac{3x}{2}$</p> <p>$y = 5x + 4$</p>
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2) QUESTIONS

1. Write the equation of a function that is linear (different from the ones above).

$$y = 2x - 10$$

2. Write the equation of a function that is non-linear.

$$y = -x^4 - (-2)$$

3. Predict which of the following are linear functions. Use a graphing calculator to check your answers.

a) $y = 7 - 2x$
linear

b) $y = -x + 4$
linear

c) $y = 8 + 3x^2$

d) $y = 8/x$

e) $y = 3x + 6$
linear

f) $y = x$
linear

4. What are the two characteristics of linear functions?

(graph characteristic)

straight line

(equation characteristic)

exponent of 1 to the x

degree = no x^2 or x^3

(table of values)

first differences are all the same.