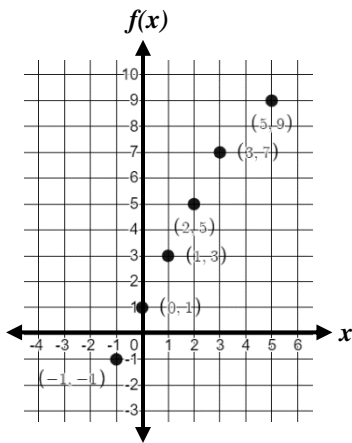


**Learning Target:** I will determine if a function is linear or non-linear.

**Form A**

## We Do Together



**1a.** Do the values of  $x$  and  $f(x)$  always change at the same rate? Yes or No

**1b.** Is the function  $f(x)$  linear or non-linear?  
Linear or Non-linear

$x$	0	1	2	3	4
$g(x)$	9	6	3	0	-6

**2a.** Which function above has a constant rate of change?  $g(x)$  or  $h(x)$

**2b.** Identify each function as linear or non-linear.

$g(x)$  Linear or Non-linear

$h(x)$  Linear or Non-linear

**2c.** Find the missing values of  $k(x)$  that will make the function linear?

$x$	-2	-1	0	1	3
$k(x)$	-4		4	8	

**3a.** Use a graphing tool to determine if each function is linear, or not.

$f(x) = 7^2$  Linear or Non-linear

$g(x) = x^2 - 7$  Linear or Non-linear

$h(x) = 2^x + 7$  Linear or Non-linear

$j(x) = -x$  Linear or Non-linear

$k(x) = x^3 + 4$  Linear or Non-linear

$p(x) = 2x + 7$  Linear or Non-linear

$q(x) = x^0 - 7$  Linear or Non-linear

**3b.** Circle each statement that describes equations of **linear** functions.

The exponent can be a variable.

There has to be a variable.

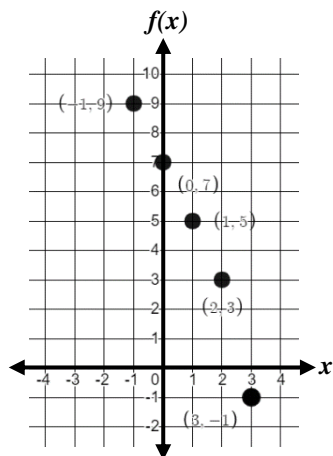
The exponent of the variable can be 0.

The exponent of the variable can be 1.

The exponent of the variable can be 2.

**4. Reflect:** What questions do you have about determining if a function is linear or non-linear?

## You Do Together



**4a.** Do the values of  $x$  and  $f(x)$  always change at the same rate? Yes or No

**4b.** Is the function  $f(x)$  linear or non-linear?  
Linear or Non-linear

$x$	0	1	2	3	4
$g(x)$	6	4	2	0	-4

**5a.** Does the function  $g(x)$  have a constant rate of change? Yes or No

**5b.** What type of function is  $g(x)$ ?  
Linear or Non-linear

**5c.** Find the missing values of  $k(x)$  that will make the function linear?

$x$	-1	0	1	2	4
$h(x)$	14		4	-1	

**For problems 6 and 7, you may use a graphing tool to support your thinking.**

**6.** Circle each **linear** function.

$f(x) = -x^2 + 1$        $g(x) = x + 4$

$h(x) = 2^x - 6$        $j(x) = -2$

$k(x) = -x^1 + 3$        $l(x) = 2x^0 + 5$

$m(x) = 9x$        $n(x) = x^5$

**7.** Circle each **non-linear** function.

$p(x) = 5^x + 1$        $q(x) = -x$

$r(x) = 4x - 2$        $t(x) = x^2 - 1$

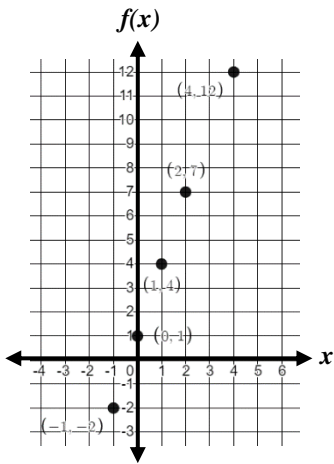
$u(x) = 9^x + 1$        $v(x) = 5x$

$w(x) = 6x^1$        $z(x) = -7$

**Learning Target:** I will determine if a function is linear or non-linear.

**Form B**

## We Do Together



**1a.** Do the values of  $x$  and  $f(x)$  always change at the same rate? Yes or No

**1b.** Is the function  $f(x)$  linear or non-linear?  
Linear or Non-linear

$x$	0	1	2	3	4
$g(x)$	4	2	0	-2	-4

**2a.** Which function above has a constant rate of change?  $g(x)$  or  $h(x)$

**2b.** Identify each function as linear or non-linear.

$g(x)$  Linear or Non-linear

$h(x)$  Linear or Non-linear

**2c.** Find the missing values of  $k(x)$  that will make the function linear?

$x$	-2	-1	0	1	3
$k(x)$	8		0	-4	

**3a.** Use a graphing tool to determine if each function is linear, or not.

$f(x) = 2x + 5$  Linear or Non-linear

$g(x) = x^2 - 5$  Linear or Non-linear

$h(x) = 2^x + 5$  Linear or Non-linear

$j(x) = x^0 - 5$  Linear or Non-linear

$k(x) = 5^2$  Linear or Non-linear

$p(x) = -x$  Linear or Non-linear

$q(x) = x^5 + 2$  Linear or Non-linear

**3b.** Circle each statement that describes equations of **non-linear** functions.

The exponent of the variable can be 2.

The exponent of the variable can be 1.

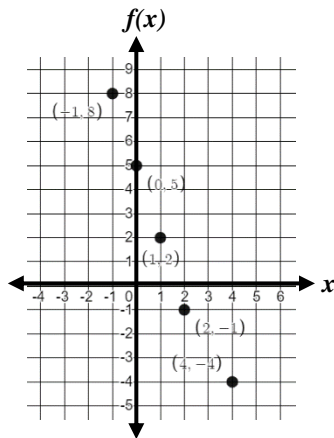
The exponent of the variable can be 0.

The exponent can be a variable.

There has to be a variable.

**4. Reflect:** What questions do you have about determining if a function is linear or non-linear?

## You Do Together



**4a.** Do the values of  $x$  and  $f(x)$  always change at the same rate? Yes or No

**4b.** Is the function  $f(x)$  linear or non-linear?  
Linear or Non-linear

$x$	0	1	2	3	4
$g(x)$	7	4	1	-2	-5

**5a.** Does the function  $g(x)$  have a constant rate of change? Yes or No

**5b.** What type of function is  $g(x)$ ?  
Linear or Non-linear

**5c.** Find the missing values of  $k(x)$  that will make the function linear?

$x$	-1	0	1	2	4
$h(x)$	-3		1	3	

**For problems 6 and 7, you may use a graphing tool to support your thinking.**

**6.** Circle each **linear** function.

$f(x) = -x^1 + 3$        $g(x) = 3x^0 + 3$

$h(x) = 3x$        $j(x) = x^3$

$k(x) = -x^2 + 3$        $l(x) = x + 3$

$m(x) = 2^x - 3$        $n(x) = -3$

**7.** Circle each **non-linear** function.

$p(x) = 7x$        $q(x) = 6^x + 1$

$r(x) = 9x^1$        $t(x) = -2$

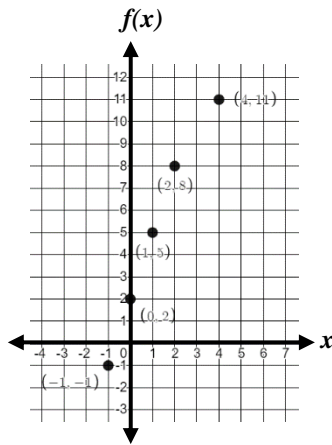
$u(x) = -x$        $v(x) = 4^x + 1$

$w(x) = 2x - 1$        $z(x) = x^3 - 1$

**Learning Target:** I will determine if a function is linear or non-linear.

**Form C**

## We Do Together



**1a.** Do the values of  $x$  and  $f(x)$  always change at the same rate? Yes or No

**1b.** Is the function  $f(x)$  linear or non-linear?  
Linear or Non-linear

$x$	0	1	2	3	4
$g(x)$	-8	-5	-2	1	7

$x$	-2	-1	0	1	2
$h(x)$	7	3	-1	-5	-9

**2a.** Which function above has a constant rate of change?  $g(x)$  or  $h(x)$

**2b.** Identify each function as linear or non-linear.

$g(x)$  Linear or Non-linear

$h(x)$  Linear or Non-linear

**2c.** Find the missing values of  $k(x)$  that will make the function linear?

$x$	-2	-1	0	1	3
$k(x)$	-5		5	10	

**3a.** Use a graphing tool to determine if each function is linear, or not.

$f(x) = 2^x + 4$  Linear or Non-linear

$g(x) = -x$  Linear or Non-linear

$h(x) = x^4 + 2$  Linear or Non-linear

$j(x) = 4x + 2$  Linear or Non-linear

$k(x) = x^0 - 4$  Linear or Non-linear

$p(x) = 4^2$  Linear or Non-linear

$q(x) = x^2 - 4$  Linear or Non-linear

**3b.** Circle each statement that describes equations of **linear** functions.

The exponent can be a variable.

There has to be a variable.

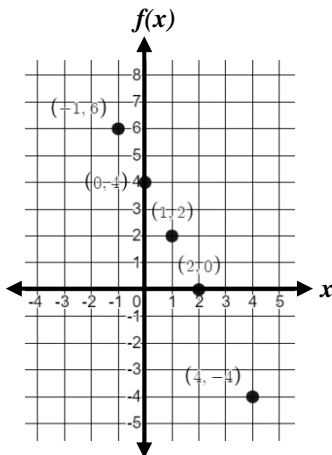
The exponent of the variable can be 2.

The exponent of the variable can be 1.

The exponent of the variable can be 0.

**4. Reflect:** What questions do you have about determining if a function is linear or non-linear?

## You Do Together



**4a.** Do the values of  $x$  and  $f(x)$  always change at the same rate? Yes or No

**4b.** Is the function  $f(x)$  linear or non-linear?  
Linear or Non-linear

$x$	0	1	2	3	4
$g(x)$	-6	-2	2	6	14

**5a.** Does the function  $g(x)$  have a constant rate of change? Yes or No

**5b.** What type of function is  $g(x)$ ?  
Linear or Non-linear

**5c.** Find the missing values of  $k(x)$  that will make the function linear?

$x$	-1	0	1	2	4
$h(x)$	5		1	-1	

**For problems 6 and 7, you may use a graphing tool to support your thinking.**

**6.** Circle each **linear** function.

$f(x) = -x^2 + 5$        $g(x) = x + 5$

$h(x) = 2^x - 1$        $j(x) = -7$

$k(x) = -x^1 + 3$        $l(x) = 2x^0 + 8$

$m(x) = 4x$        $n(x) = x^2$

**7.** Circle each **non-linear** function.

$p(x) = x^3 - 1$        $q(x) = 6x - 2$

$r(x) = 6^x + 1$        $t(x) = 2x$

$u(x) = -2$        $v(x) = 6x^1$

$w(x) = -x$        $z(x) = 3^x + 1$