MTH-4109-1 Sets, Relations and Functions Name: Shanna

1. Consider the following statements A - O. After examining the eight graphs which follow, print each letter next to each graph to which it corresponds. The same letter may definitely be used more than once!

A. It has a maximum.

B. It has only one zero, which is negative.

C. It is decreasing over its entire domain.

D. It is decreasing if $x \in -2, \infty]$.

E. The function is negative if $x \in [0, 2]$.

F. The equation of the axis of symmetry is $x = h$ and $h > 0$.

G. The function has two zeros, one of which is the y-intercept.

H. It has two zeros, one which is negative and one positive.

I. It is increasing over its entire domain.

J. It is increasing if $x \in -\infty, -2]$.

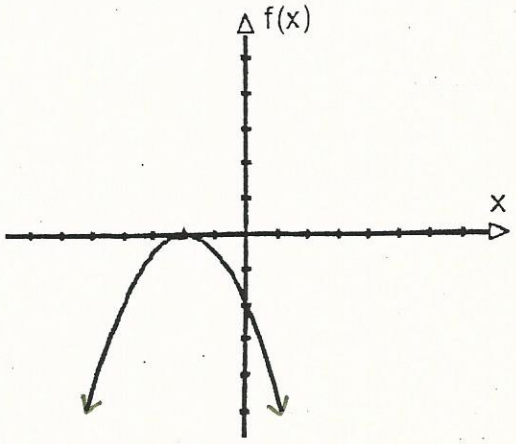
K. The range of the function is $[-3, \infty$.

L The equation of the axis of symmetry is $x = h$ and $h < 0$.

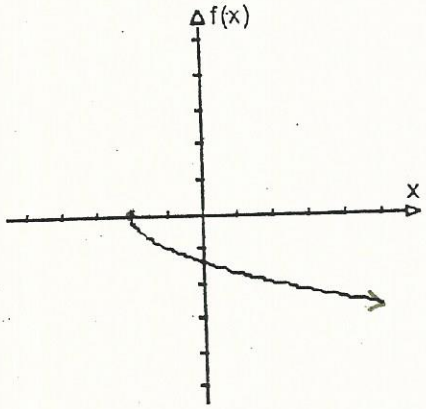
M. The equation of the axis of symmetry is $x = h$ and $h = 0$.

N. The range of this function is $-\infty, 2]$.

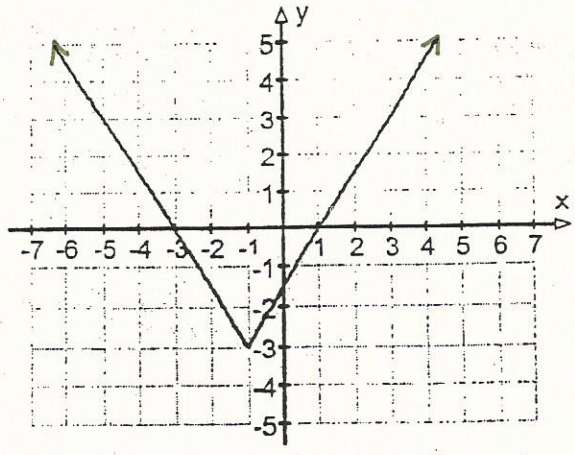
O. The domain of this function is $[-2, \infty$.



1. A, B, D, E, J, L

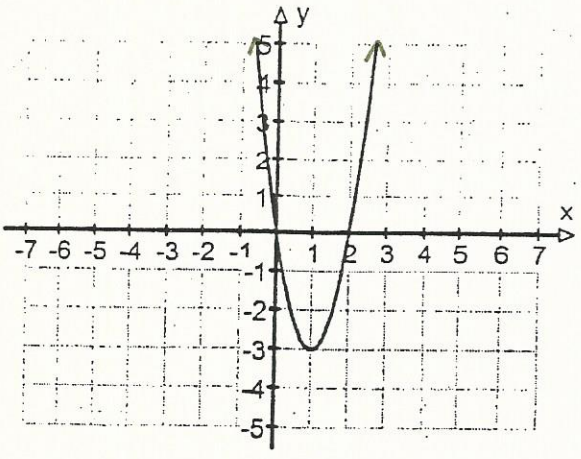


2. A, B, C, D, E, O

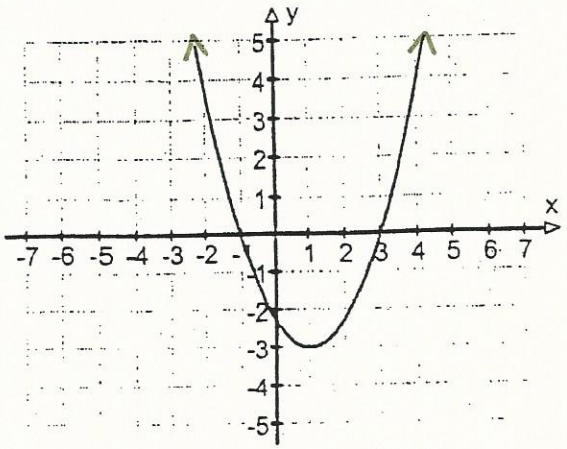


3. H, K, L

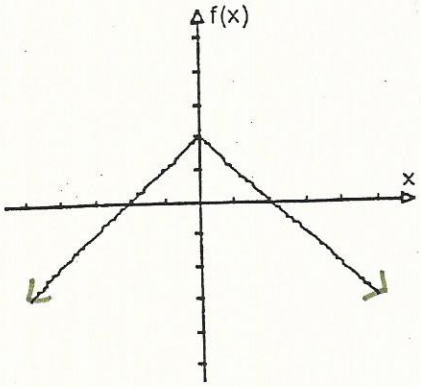
* When the line touches the edge of the graph paper we assume it goes to infinity...



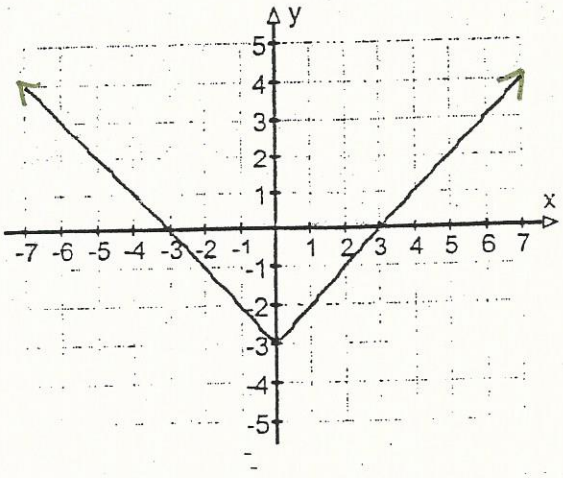
4. E, F, G, K



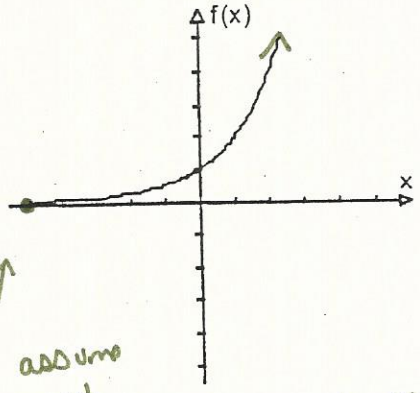
5. E, F, H, K



6. A, H, J, M, N



7. E, H, K, M



Let's assume x-intercept here. It's ambiguous. We could also have assumed it's an asymptote...

8. B, I

2. Six representations are given below.

A k(x): The function used to calculate the length of each side of a cube whose volume is equal to x metres cubed.

Length = $\sqrt[3]{\text{volume}}$

$y = \sqrt[3]{x}$

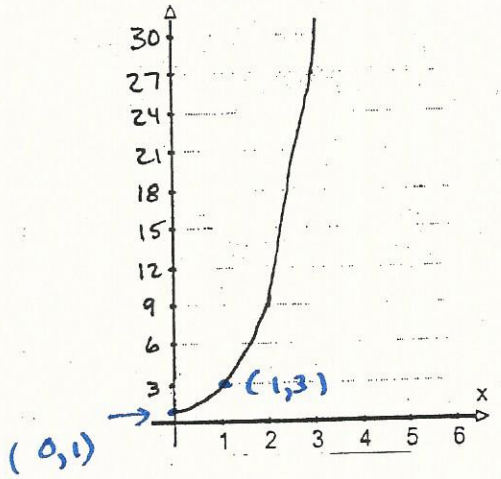
B

x	g(x)
0	0
1	1
8	2
27	3
64	4

C

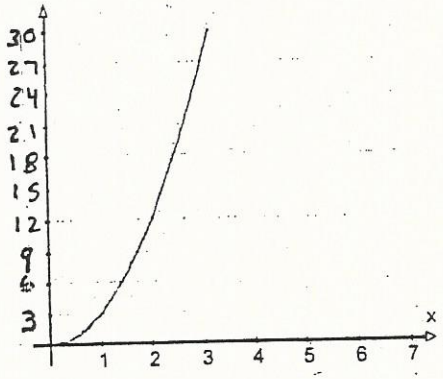
x	i(x)
0	1
1	3
2	9
3	27
4	81

D f(x)



E $h(x) = 3^x$

F j(x)



Three of these representations correspond to the same function f_1 and two of them correspond to another function f_2.

Indicate which representations correspond to each function.

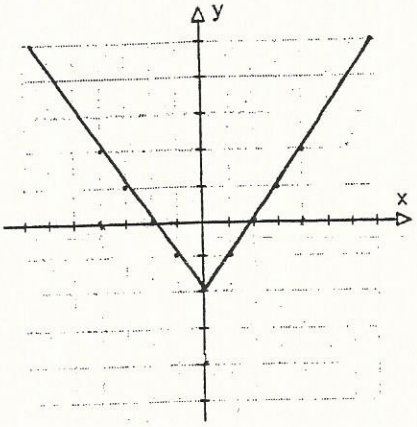
f_1: C, D, E

f_2: A, B

3. Six representations are given below.

A $k(x) = |x| - 2$

B $j(x)$



C

x	i(x)
-4	2
-3	1
-2	0
-1	-1
0	-2
1	-1
2	0
3	1

D

x	h(x)
-4	-6
-3	-5
-2	-4
-1	-3
0	-2
1	-1
2	0
3	1

E $\frac{f(x)}{1} = x - 2$

F $g(x)$ = The image of an element is obtained by subtracting 2 from the square of this element.

Three of these representations correspond to the same function $\mathbf{f_1}$ and two of them correspond to another function $\mathbf{f_2}$.

Indicate which representations correspond to each function.

f_1: A, B, C

f_2: D, E

Six representations are given below.

A

$f(x) = |x| - 2$

B

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

C

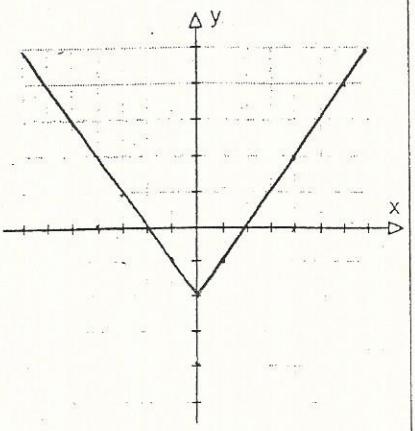
x	h(x)
-3	1
-2	0
-1	-1
0	-2
1	-1
2	0
3	1
4	2

D

i(x) = The image of an element is obtained by subtracting 2 from the square of this element.

E

j(x)



F

$k(x) = x - 2$

Three of these representations correspond to the same function f_1 and two of them Correspond to another function f_2.

Indicate which representations correspond to each function.

f_1 : A, C, E

f_2 : B, F