F6

Lucas Chang	Chloe Fang	Bruce Gao	Wyatt Hou	Jackson Jiang	Ivan Lei	Eric Li	Keira Li	Vivian Li
Jeremy Lin	Orange Liu	Serika Ren	Yumiko Shi	Hannah Si	Eric Song	Eric Tan	Silas Wang	Niki Wei
Kiki Wen	Miyu Wu	Tia Wu	Kumi Yuan	Estelle Zhang	Soren Zhang	Viakey Zhang	Jack Zhao	

Aris Cheng	Tracy Dang	Jason Du	Alanna Fan	Iris Gao	Eason Gong	Vardy Hai	Edmund He	Liora Li
Miranda Li	Leo Liu	Francis Lv	Dorothy Qian	Dary Song	Jerry Tu	Belinda Wang	Winnie Wang	Elena Wei
James Xu	Mike Yan	Simon Yang	Coco Zhang	Patrick Zhang	Sophia Zhang	Molly Zheng	Carrie Zhou	Rudy Zhu

F4

F2

Angelina Wang	Azura Cheng	Bonnie Zhao	Cecilia Jia	Diana Li	Oscar Liu	Zavier Liu	Tom Ou	Mia Peng
Joshua Hui	Julius Lv	Justin Jia	Lucas Li	Lyra Zhang	Iris Shao	Dylan Suo	PeytonAson Wang	Struck Wang
Selene Hou	Serena Feng	Silas Lv	Simon Wang	Stella Sun	Yola Wang	Mark Xiao	Elsa Ye	Emily Zhang
Zinnia Dong	Flora Zhang							


Annie Bai
Franklin Chen
Charlie Cheng
Zoey Cheng
Harry Cui
King Deng
Aisling Fu
Ken He
Ivy Jing
Lee Li
Ziheng Li
Lewis Liu
Sam Liu
Ava Peng
Peter Shen
Sylvia Song
Coco Wang
Eileen Wang
Jason Wang
Luna Wang
Cathy Yan
Melody You
Allen Zhang
Lucas Zhang
Lynette Zhang
Ryder Zhang
Flora Zhou
Cyntina Zuo

F1

F3


Allen Peng
Aurora Yuan
Brittney Wei
Cynthia Liu
Erya Hu
Eva Gai
Felicity Pan
Fiona Ding
Freya Fan
Gordon Yao
Helios Luo
Honey Ruan
Iris Xie
Jasper Wu
Kaven Zhang
Kevin Gao
Leo Yang
Linger Li
Lydia Wei
Maggie Gao
Micheal Zhao
Ray Meng
Rose Jiang
Ross Ma
Roy Liu
Ryan Wang
Sky Bai
Star Su
Stella Xi


Abbie Dong
Alan Chen
Angela An
Annette Zhao
Asher Tian
Jove Bai
Camellia Long
Candice Li
Carmen Du
Ricardo Lian
Emma Zhang
Ethan Yu
Ethen Li
Jack Spark Men
Jarry Wang
Cressen Liang
Leo Liu
Lucas Bai
Lycia Liu
Nina Dang
August Mao
Robin Mi
Vicky Yang
Victor Li
Yolanda Wang
Zephyra Hu

F5

GRAPHING RATIONAL FUNCTIONS

Consider the rational function:

$$f(x) = \frac{x^2 - 4}{x^2 - 2x}$$

a) Find the **holes** of the function (if any).

b) Find the **vertical asymptotes** of the function (if any).

c) Find the **x-intercepts** of the function.

d) Find the **y-intercept** of the function.

GRAPH OF RATIONAL FUNCTIONS

Consider the rational function:

$$f(x) = \frac{x^2 - 4}{x^2 - 2x}$$

a) Find the **holes** of the function (if any).

b) Find the **vertical asymptotes** of the function (if any).

c) Find the **x-intercepts** of the function.

d) Find the **y-intercept** of the function.

- **Hole:** $x = 2$
- **Vertical Asymptote:** $x = 0$
- **x-intercept:** $x = -2$
- **y-intercept:** None (undefined)

GRAPHING RATIONAL FUNCTIONS

In this section, you will:

- Find the intercepts of rational functions.
- Graph rational functions.
- Solve applied problems involving rational functions.

Reminders
Project Deadline – 9th Jan. Everyone upload on Jupiter
Complex Number Quiz – 11th Jan. Let me know if can't access it.

Hole (in the graph)

English: Hole

Chinese: 空洞 (kōng dòng)

X-Intercept

English: X-Intercept

Chinese: x 截距 (x jié jù)

Y-Intercept

English: Y-Intercept

Chinese: y 截距 (y jié jù)

Domain

English: Domain

Chinese: 定义域 (dìng yì yù)

2-08 GRAPHS OF RATIONAL FUNCTIONS

- To graph rational functions

1. Find asymptotes
2. Find x –intercept and y-intercept

2-08 GRAPHS OF RATIONAL FUNCTIONS

- Graph $f(x) = \dfrac{3x}{x^2+x-2}$

Y-INTERCEPT
(0,0)

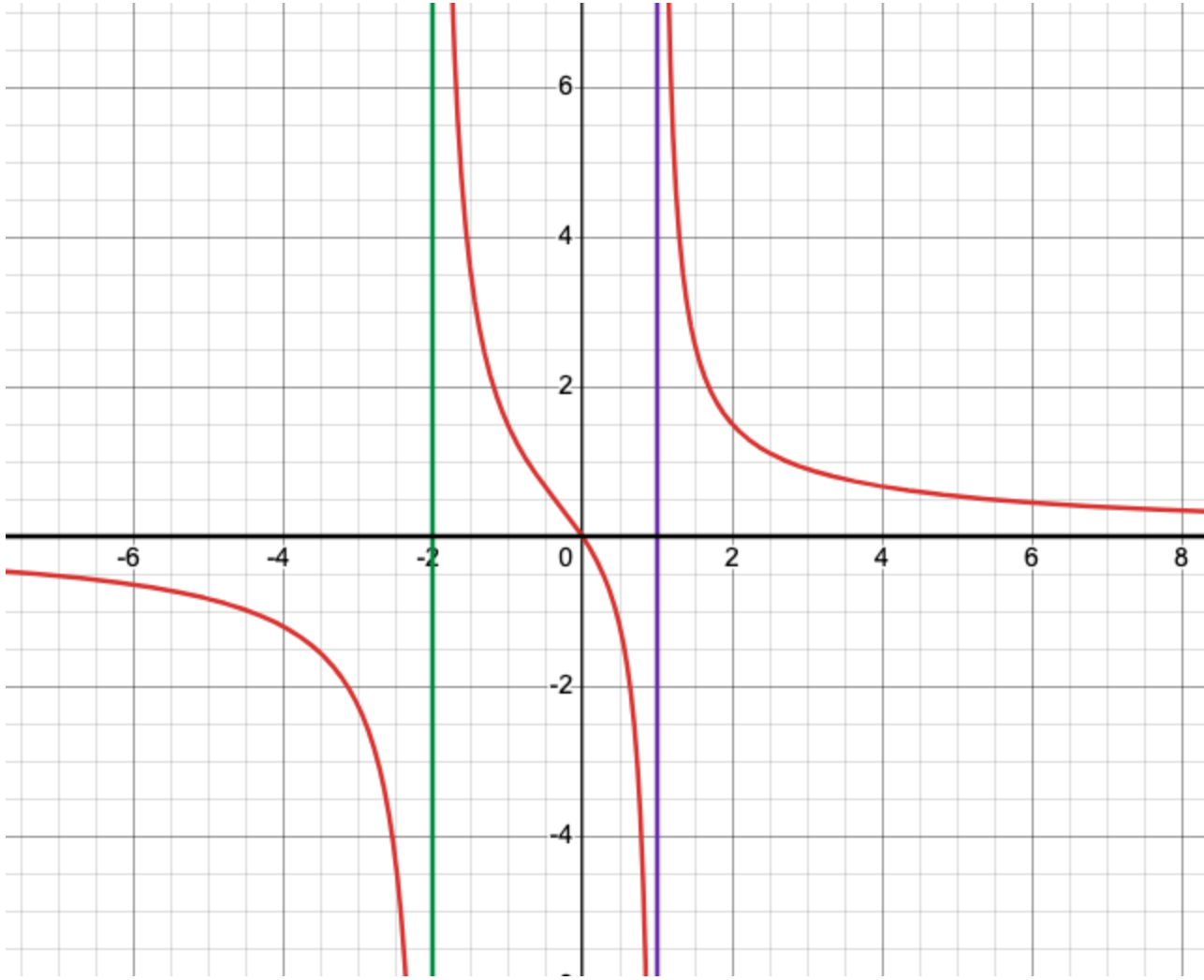
VA: x = 1, x = -2
HA: y = 0

2-08 GRAPHS OF RATIONAL FUNCTIONS

- Graph $f(x) = \dfrac{3x}{x^2+x-2}$

Y-INTERCEPT
(0,0)

VA: x = 1, x = -2
HA: y = 0



2-08 GRAPHS OF RATIONAL FUNCTIONS

- Sketch the function

$$y = \frac{2(x-1)}{(x-2)(x+1)}$$

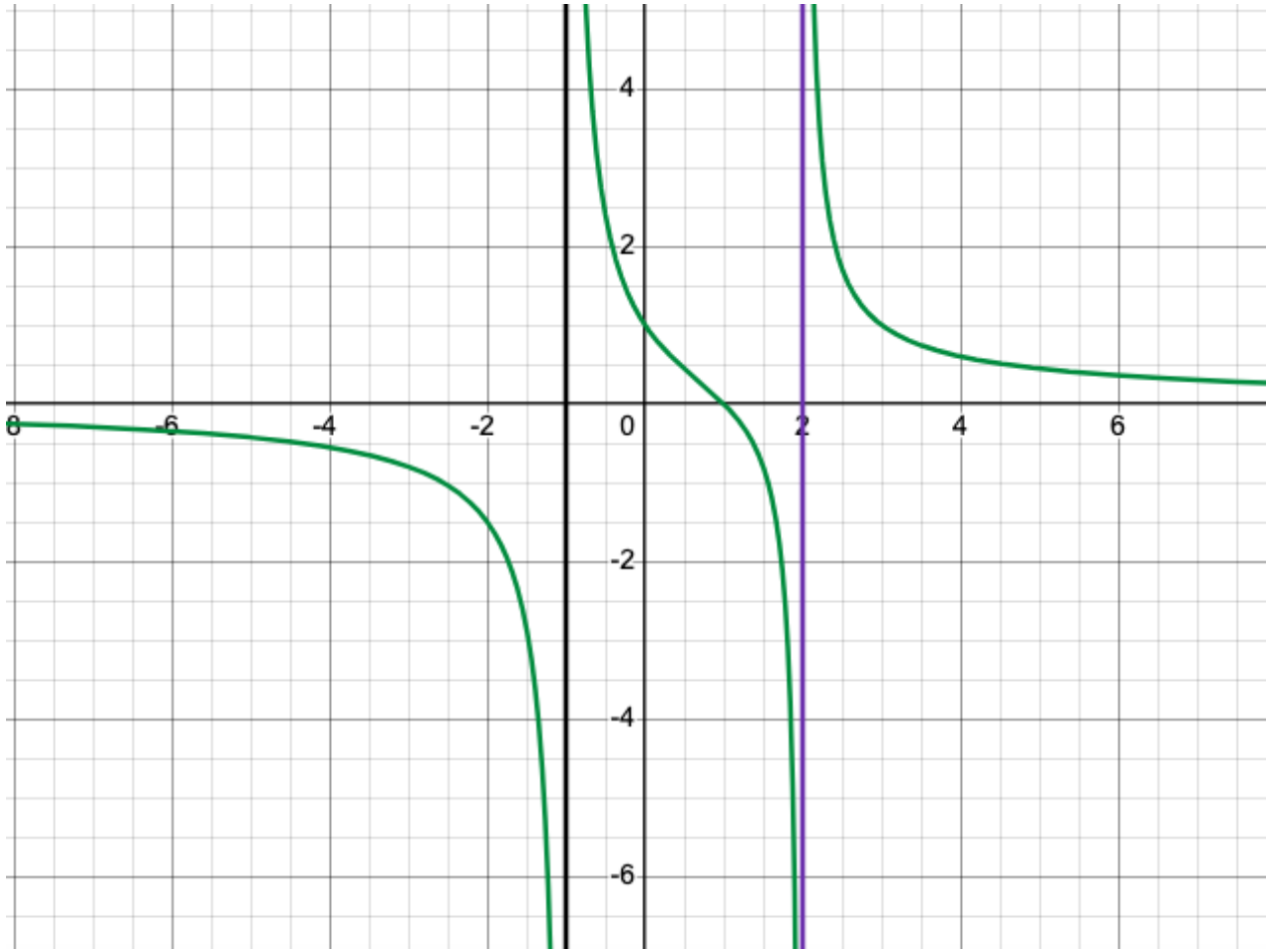
X- INTERCEPT
(1,0)
Y-INTERCEPT
(0,1)

VA: x = 2, x = -1
HA: y = 0

2-08 GRAPHS OF RATIONAL FUNCTIONS

- Find the function

$$y = \frac{2(x-1)}{(x-2)(x+1)}$$



X- INTERCEPT
(1,0)
Y-INTERCEPT
(0,1)

VA: x = 2, x = -1
HA: y=0

2-08 GRAPHS OF RATIONAL FUNCTIONS

- Graph $f(x) = \dfrac{4x^2 - 4}{x}$

Y-INTERCEPT - none

X-INTERCEPT
(1,0) and (-1,0)

VA: x = 0
SLANT: y = 4x-4

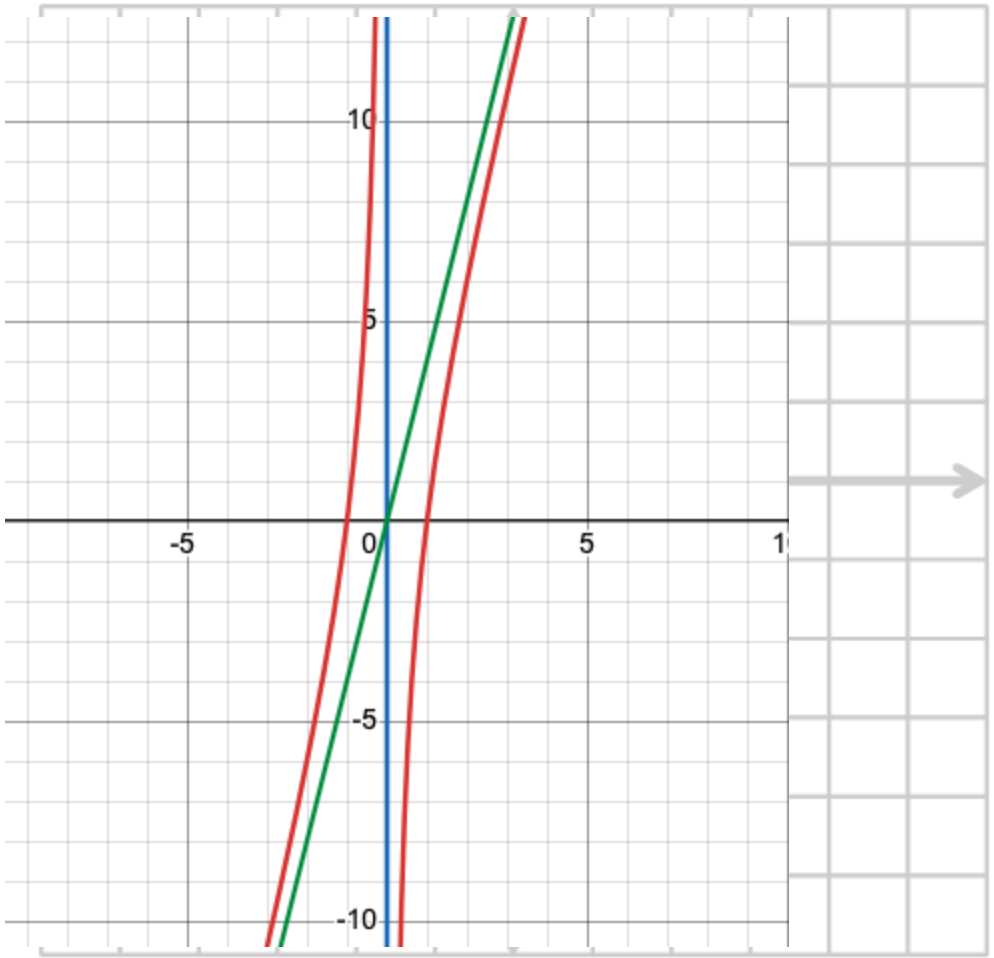
2-08 GRAPHS OF RATIONAL FUNCTIONS

- Graph $f(x) = \dfrac{4x^2 - 4}{x}$

Y-INTERCEPT - none

X-INTERCEPT
(1,0) and (-1,0)

VA: x = 0
SLANT: y = 4x-4



TRUE OR FALSE

- The domain of a rational function includes all real numbers.

TRUE OR FALSE

- The domain of a rational function includes all real numbers.

FALSE

TRUE OR FALSE

- If a factor cancels between the numerator and denominator, the graph has a vertical asymptote

TRUE OR FALSE

- If a factor cancels between the numerator and denominator, the graph has a vertical asymptote

FALSE

TRUE OR FALSE

- Vertical asymptotes occur where the numerator equals zero.

TRUE OR FALSE

- Vertical asymptotes occur where the numerator equals zero.

FALSE

Rational Functions – Worksheet

Consider the rational function: $h(x) = \dfrac{x^2 - 1}{x - 2}$

Answer the following questions carefully. Show all necessary working where appropriate.

#Vertical Asymptote

(a) Find the vertical asymptote(s) of the function.

Horizontal / Slant Asymptote

(a) Determine whether the function has a horizontal or slant (oblique) asymptote.

(b) Write the equation of the asymptote.

Slant

Intercepts

(a) Find the x-intercept(s).

(b) Find the y-intercept.

Behavior:

(a) As $x \to 2^-$, describe the behavior of $h(x)$.

(b) As $x \to 2^+$, describe the behavior of $h(x)$.

Intercepts

(a) Find the x-intercept(s).

(1,0)

(b) Find the y-intercept.

(0,0.5)

Behavior:

(a) As $x \to 2^-$, describe the behavior of h(x).

h(x) gets smaller

(b) As $x \to 2^+$, describe the behavior of h(x).

h(x) gets bigger

Behavior Relative to the Slant Asymptote:

a) For large positive values of x, does the graph approach the slant asymptote from **above** **below**?

(b) For large negative values of x, does the graph approach the slant asymptote from **abov** or **below**?

Sketching the Graph

Using all the information above, sketch a neat and labelled graph of h(x).

(Use the space below)

Behavior Relative to the Slant Asymptote:

a) For large positive values of x, does the graph approach the slant asymptote from **above** **below**?

Above

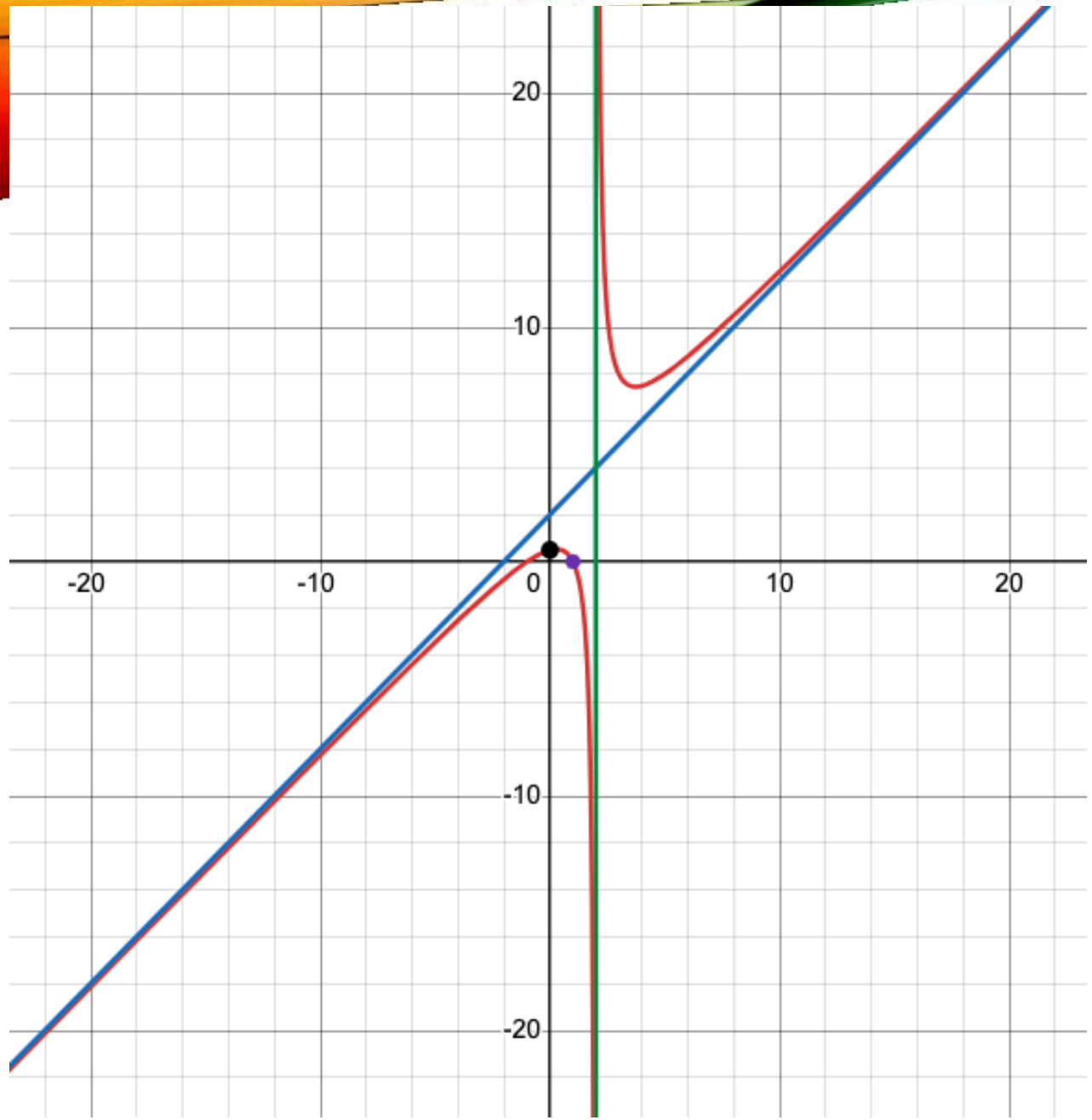
(b) For large negative values of x, does the graph approach the slant asymptote from **abov** or **below**?

Below

Sketching the Graph

Using all the information above, sketch a neat and labelled graph of h(x).

(Use the space below)


20
10
-20
-10
0
10
20
-10
-20