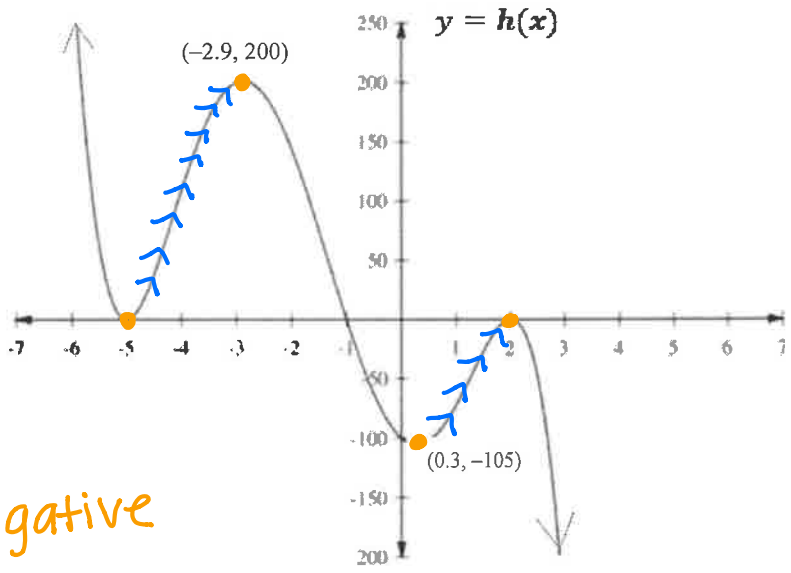
# Homework 2-1
## Key Features of Functions

1. The function $y = h(x)$ is shown on the right.




Answer the following questions based on its graph.

(a) State the zeroes of $h(x)$.

X = -5 X = 1 X = 2

(b) State all intervals on which is $h(x)$ increasing?

(-5, -2.9) and (.3, 2)

(c) State all intervals on which $h(x) < 0$?

← negative

(-1, 2) or (2, ∞)

(d) What are the relative maximums and relative minimums of $h(x)$?

Relative Max: y = 200 and y = 0

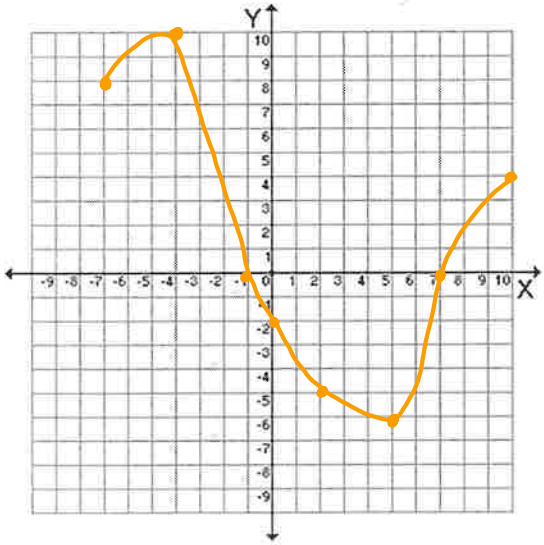
Relative Min: y = -105 and y = 0

2. A continuous function has a domain of $-7 \le x \le 10$ and has selected values shown in the table below. The function has exactly two zeroes and a relative maximum at (–4, 10) and a relative minimum at $(5, -6)$.

| $x$ | -7 | -4 | -1 | 0 | 2 | 5 | 7 | 10 |
|---|---|---|---|---|---|---|---|---|
| $f(x)$ | 8 | 10 | 0 | -2 | -5 | -6 | 0 | 4 |

negative ↓

(a) Sketch a graph of $f(x)$.



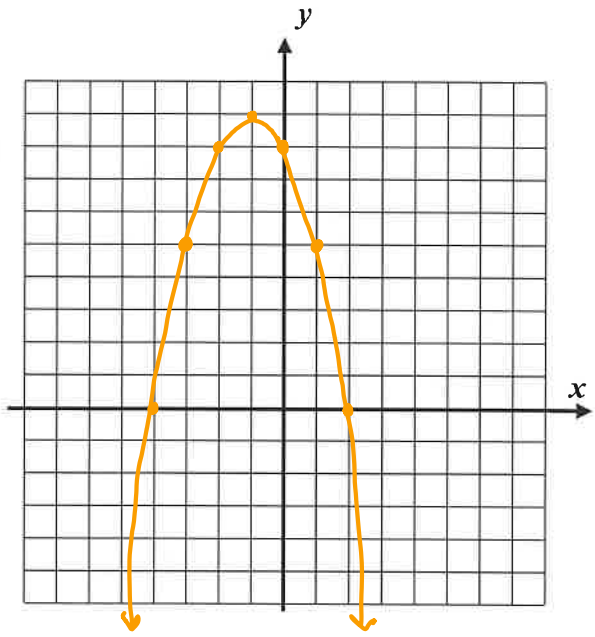
(b) State the interval over which $f(x) < 0$.

(-1, 7)

(c) State the interval on which $f(x)$ is decreasing.

(-4, 5)

3. For the function $g(x)=9-(x+1)^2$ do the following.




(a) Using your calculator, sketch the graph of $g$ on the axes provided. Label the coordinates of at least three points on your graph.

(b) State the zeroes of $g$.

$x=-4 \quad x=2$

(c) Over what interval is $g(x)$ decreasing?

$x>-1$

(d) Over what interval is $g(x)\geq 0$?

$-4\leq x\leq 2$

(e) State the range of $g$ and the absolute maximum value.

Range: $y\leq 9$ Abs Max: $y=9$

4. Solve the equation: $\frac{10}{x^2-2x}+\frac{4}{x}=\frac{5}{x-2}$

LCD: $x(x-2)$

$x(x-2)\left(\frac{10}{x(x-2)}+\frac{4}{x}=\frac{5}{x-2}\right)$

$10+4(x-2)=5x$

$10+4x-8=5x$

$2+4x=5x$

$2=x$

Reject

No Solution

| | | | |
|---|---|---|---|
| ☐ I got | ☐ I almost got it... | ☐ I need more practice... | ☐ I don't get it... Help! |