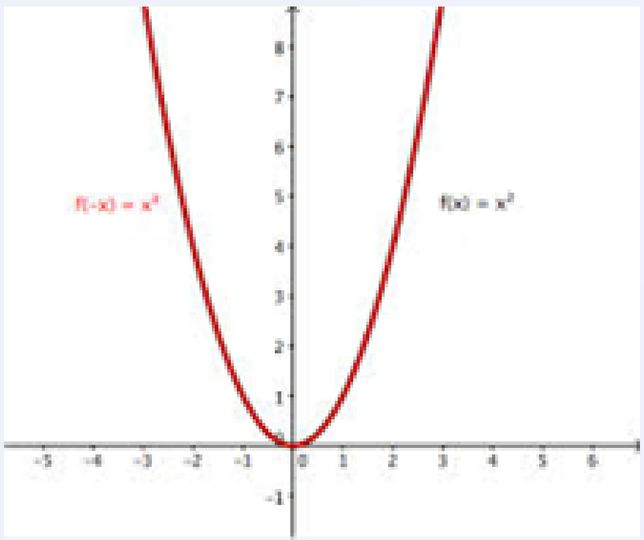
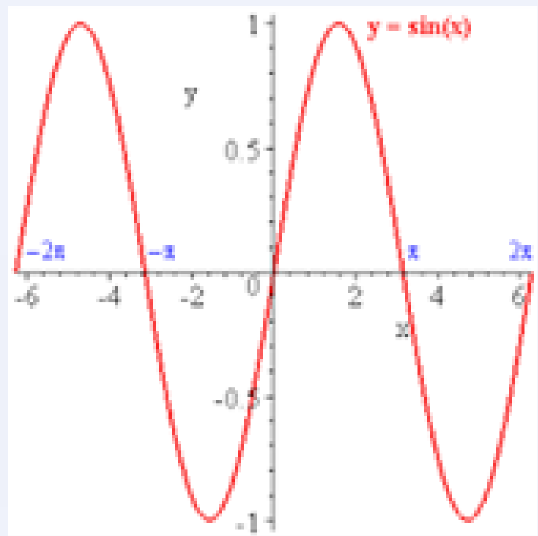
DO NOW (DAY2)

IDENTIFY EACH FUNCTION AS EVEN OR ODD

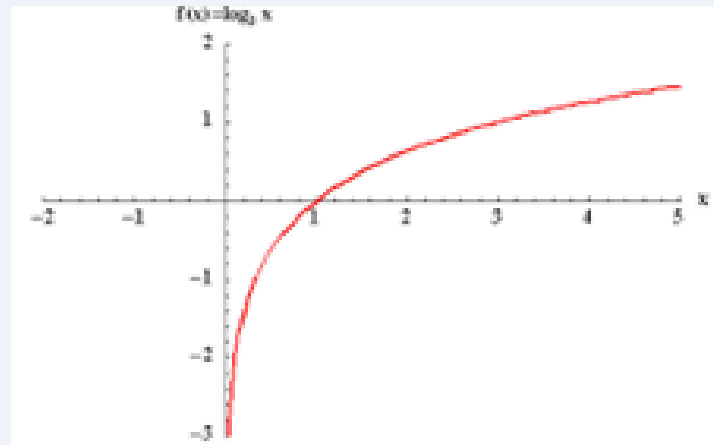
or neither



even



odd



neither

TAKE OUT FRIDAY'S PACKET
(SECTION 2.3)

QUIZ TOMORROW
ANYONE HAVE ANYTHING TO HAND IT?

OBJECTIVE 2

IDENTIFY EVEN AND ODD FUNCTIONS FROM THE EQUATION

Example...

Identifying EVEN and ODD functions

Use the graphng utility to conjecture whether each of the following functions is even, odd, or neither. Verify the conjecture algebraically. Then state whether the graph is symmetric with respect to the y-axis or with respect to the origin.

$f(x) = -3x^4 - x^2 + 2$ even

$g(x) = 5x^3 - 1$ neither

$h(x) = 2x^3 - x$ odd.

INTERVAL NOTATION

Let a and b be two real numbers with $a < b$. Then,

A **closed interval** represented by **[a, b]** consists of all real numbers x such that $a \leq x \leq b$.

An **open interval** represented by **(a, b)** consists of all real numbers x such that $a < x < b$.

A **half-open**, or **half-closed** interval is **(a, b]** consists of all real numbers x such that $a < x \leq b$, and, **[a, b)** consisting of all real numbers x such that $a \leq x < b$.

In the above definitions, a is the **left endpoint** and b is the **right endpoint** of the interval.

$+\infty$ or $-\infty$ is not a real number. It is only used to indicate that there are no boudaries in that direction.

Examples

$1 < x < 3$ would have the interval notation $(1, 3)$.

$2 \leq x < 5$ would have the interval notation $[2, 5)$.

$x > 7$ would have the interval notation $(7, \infty)$

$x \leq 5$ would have the interval notation $(-\infty, 5]$

DOMAINS OF FUNCTIONS IN INTERVAL NOTATION

Name the domain for each function below.

1) $f(x) = x^2 + 3x - 5$

The domain of all polynomial functions is all real numbers. Since this is a polynomial function, the domain is $(-\infty, \infty)$.

2) $g(x) = \frac{x-1}{x+3}$

This is a rational function. The domain of a rational function is all real numbers except the values for x where the denominator is zero. Therefore, $x \neq -3.$ The domain is $(-\infty,-3) \cup (-3,\infty)$. The $\cup$ means or. The notation represents all numbers less than -3 are in the domain as well as all numbers greater than 3 are in the domain.

3) $f(x) = \sqrt{x-2}$

The square root function is defined for real numbers only when the radicand (number under the radical) is nonnegative. Therefore, $x - 2 \geq 0$. Solving this inequality makes the domain $x \geq 2$. In interval notation, $[2, \infty)$.

OBJECTIVE 3

USE A GRAPH TO DETERMINE WHERE A FUNCTION IS INCREASING, DECREASING, OR CONSTANT

Example...

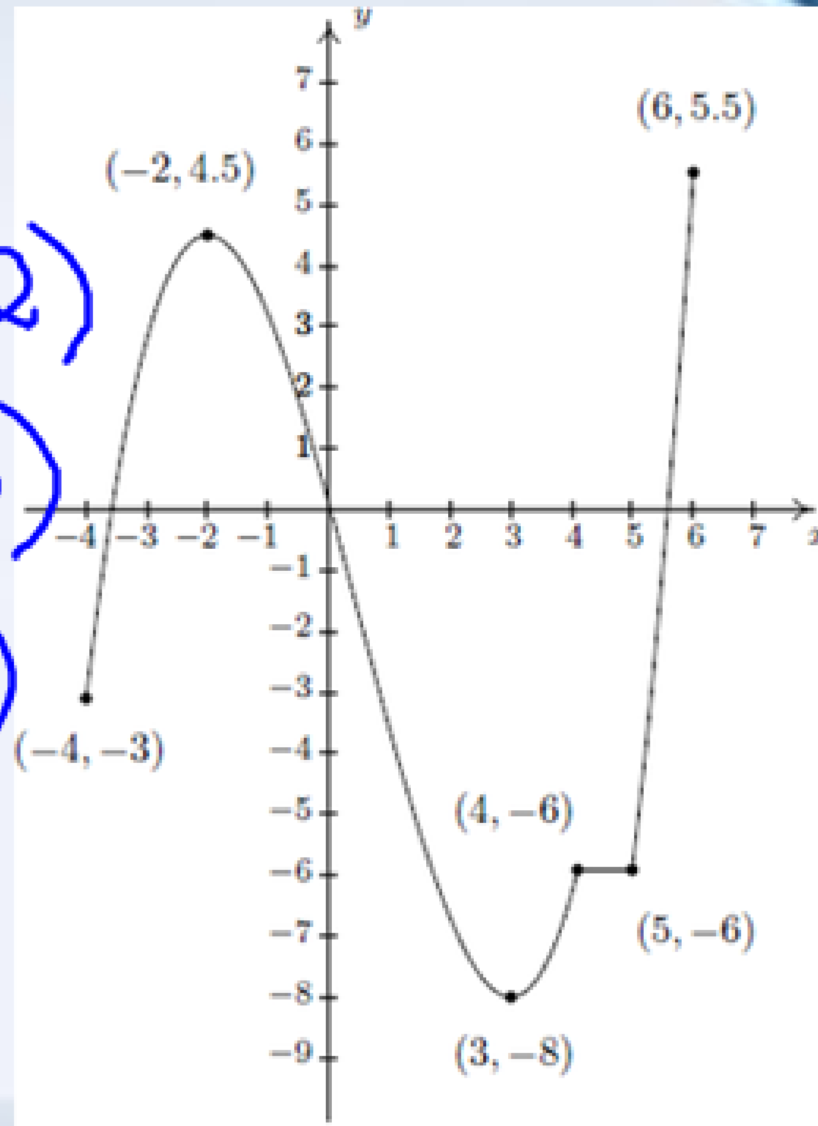
Determine where a function is increasing, decreasing, or constant from its graph.

Where is the function increasing?

$-4 < x < -2$ $(-4, -2)$

$5 < x < 6$ $(5, 6)$

$3 < x < 4$ $(3, 4)$



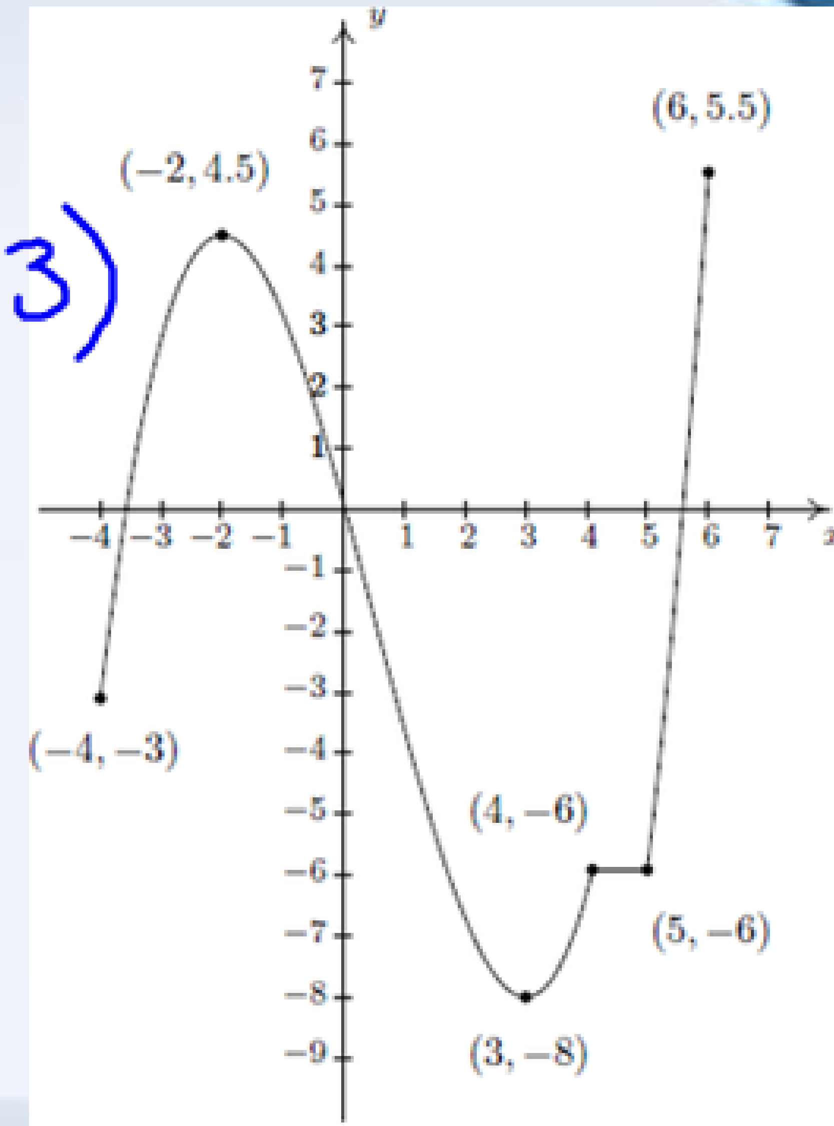
The graph of $y = f(x)$

Example...

Determine where a function is increasing, decreasing, or constant from its graph.

Where is the function decreasing?

$-2 < x < 3$ $(-2, 3)$



The graph of $y = f(x)$

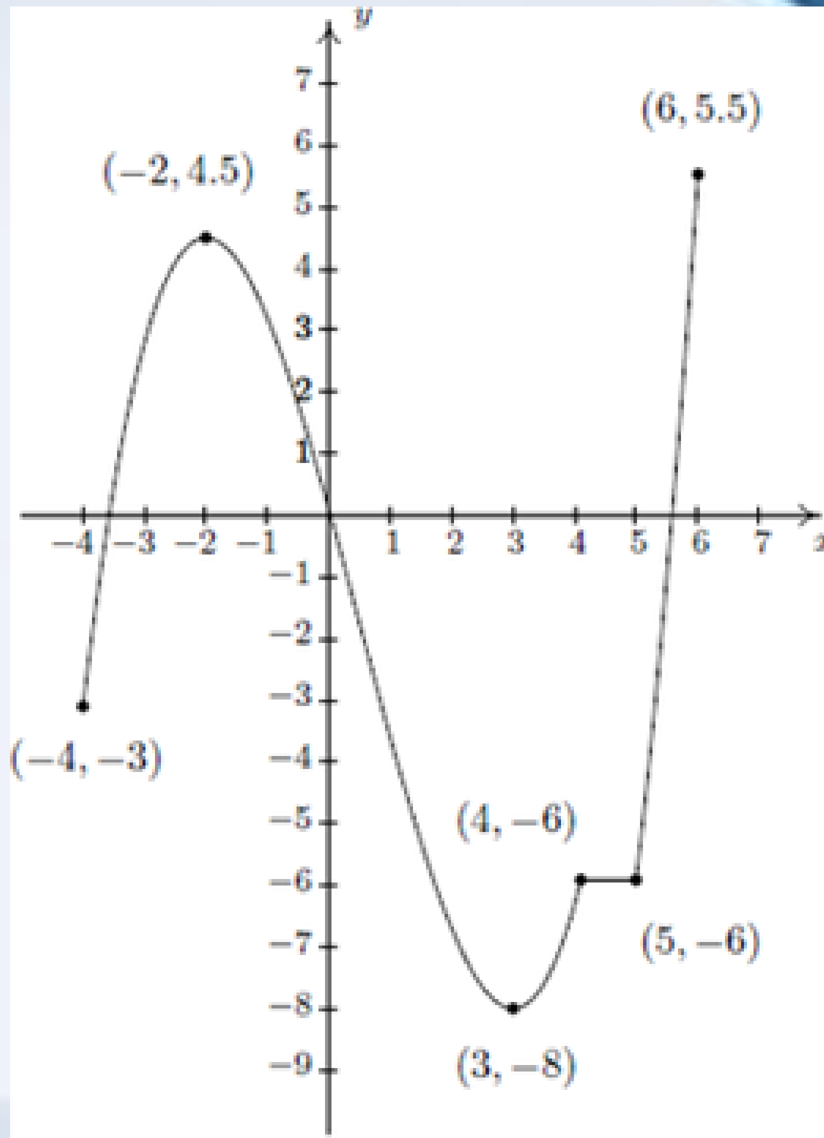
Example...

Determine where a function is increasing, decreasing, or constant from its graph.

Where is the function constant?

$4 < x < 5$

$(4, 5)$

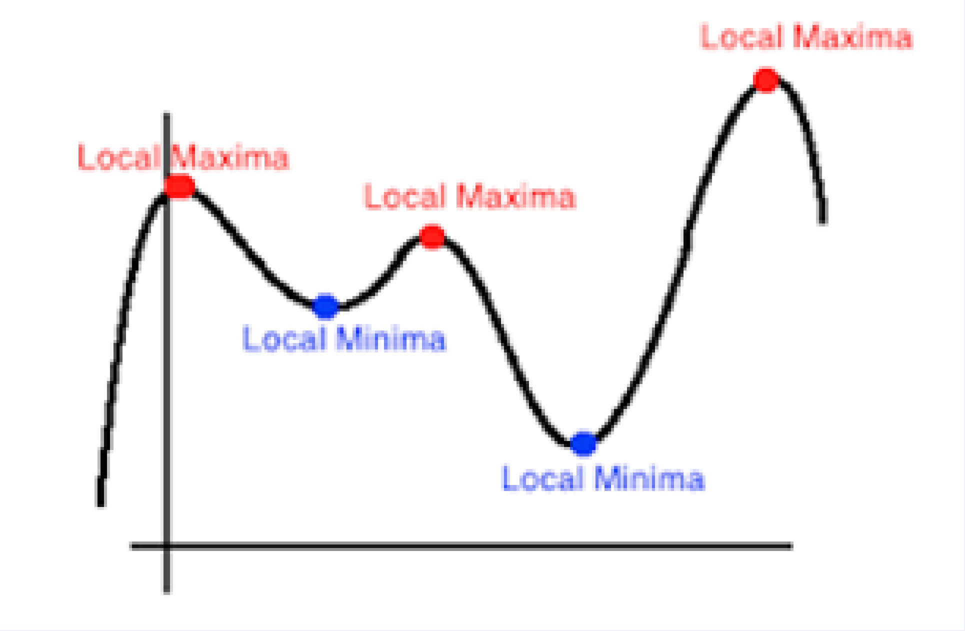


The graph of $y = f(x)$

OBJECTIVE 4

USE A GRAPH TO LOCATE LOCAL MAXIMA AND LOCAL MINIMA

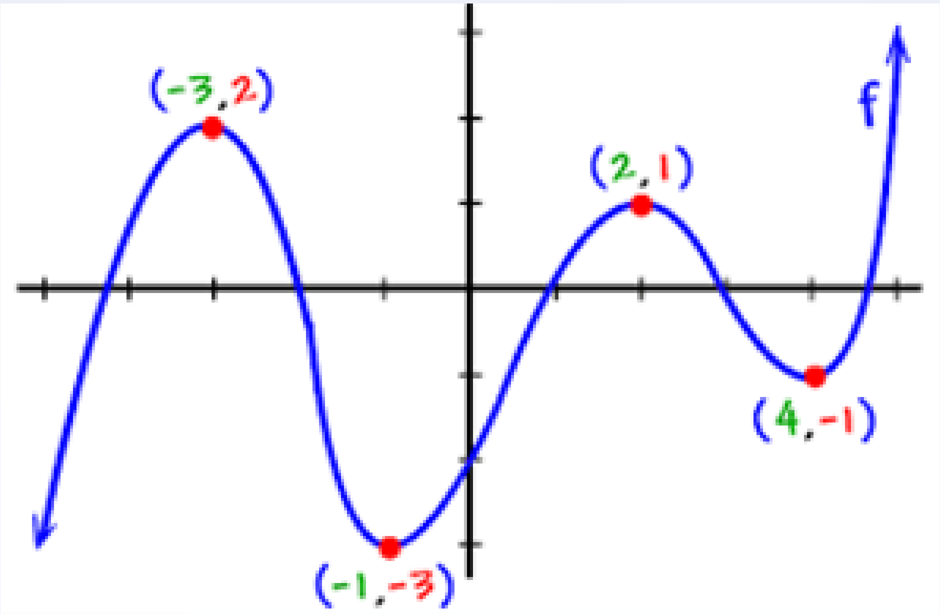
The Local Maxima is every high peak of a graph. The graph will go from increaing to decreasing. The point of change is our local maxima.



The Local Minima is every low point of a graph. The graph will go from decreasing to increasing. The point of change is our local minima.

Example...

Finding the local maxima and local minima from the graph of a function and determine where the function is increasing, decreasing, or constant.



(a) At what number(s), if any, does f have a local maximum?

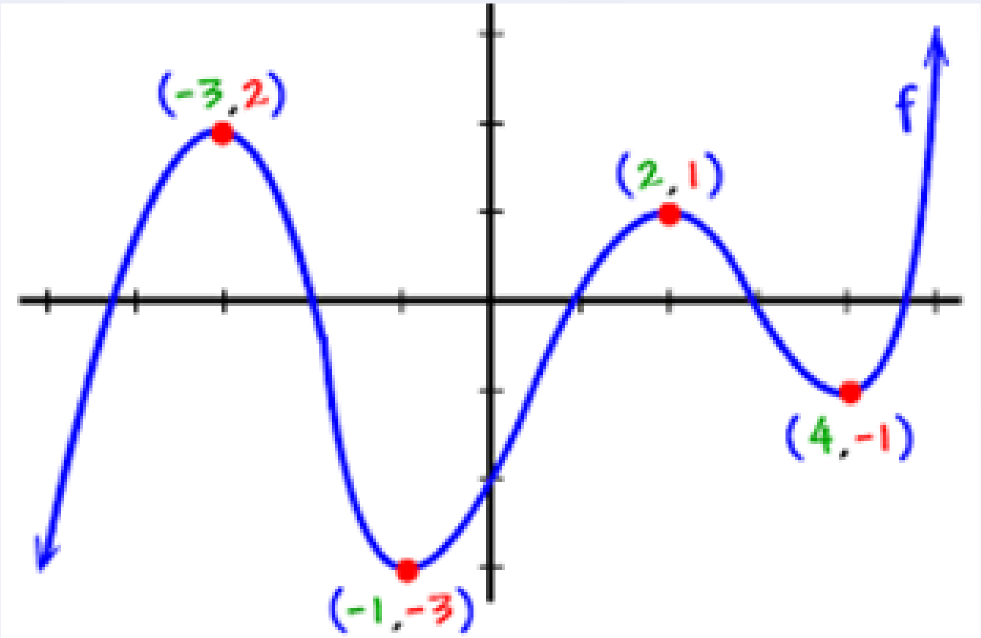
-3, 2

(b) What are the local maxima?

$f(-3)=2$, $f(2)=1$

Example...

Finding the local maxima and local minima from the graph of a function and determine where the function is increasing, decreasing, or constant.



(a) At what number(s), if any, does f have a local Minimum?

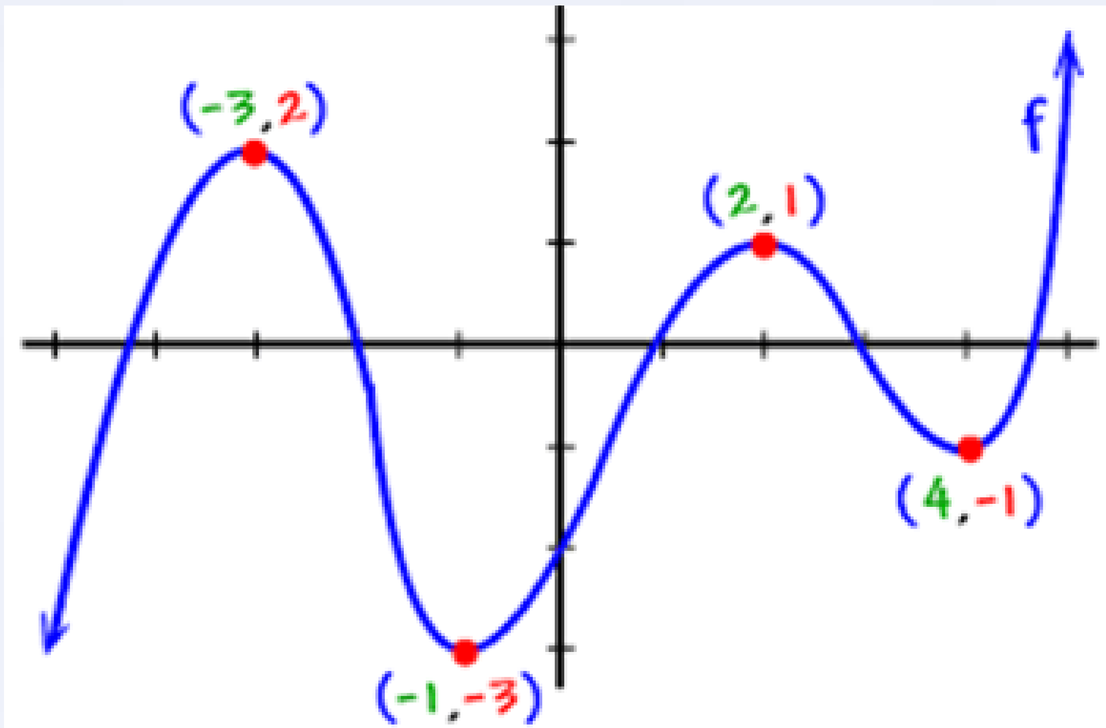
-1, 4

(b) What are the local minima?

f(-1) = -3, f(4) = -1

Example...

Finding the local maxima and local minima from the graph of a function and determine where the function is increasing, decreasing, or constant.



(-3,-1)
(2,4)

List the intervals on which f is increasing, List the intervals on which f is decreasing.

(-1,2) (4,∞) (-∞,-3)

Dont Forget the Review Packet

QUIZ WEDNESDAY

Homework
pg.86-87
#11-20