

GOOD MORNING!!

Write your homework question on the side board and get started on the questions below.

For the functions $f(x) = 2x^2 + 4$ $g(x) = 4x^2 + 2$

Find the following...

(a) $(f + g)(x)$

$$\begin{array}{r} \underline{2x^2 + 4} + \underline{4x^2 + 2} \\ \hline 6x^2 + 6 \end{array}$$

(b) $(f - g)(x)$

$$\begin{array}{r} \underline{2x^2 + 4} - (4x^2 + 2) \\ \hline 2x^2 + 4 - 4x^2 - 2 \\ \hline -2x^2 + 2 \end{array}$$

(c) $(f \cdot g)(x)$

(d) $\left(\frac{f}{g}\right)(x)$

**PG. 67-68 DUE
TODAY...**

HOMWORK QUESTIONS...

$$64g) \quad f(x) = 2x^2 + 3 \quad g(x) = 4x^3 + 1$$

$$(f \cdot g)(2) \quad (2x^2 + 3)(4x^3 + 1)$$

$$(2(2)^2 + 3)(4(2)^3 + 1)$$

$$(11)(33)$$

$$363$$

$$69) f(x) = \frac{2x+3}{3x-2}$$

$$g(x) = \frac{4x}{3x-2}$$

$$\frac{2x+3}{3x-2} + \frac{4x}{3x-2} = \frac{2x+3+4x}{3x-2}$$

$$\boxed{\frac{6x+3}{3x-2}} = \frac{3(2x+1)}{3x-2}$$

$$73) \quad 4x + 3 = f(x)$$

$$\frac{f(x+h) - f(x)}{h}$$

$$\frac{4(x+h) + 3 - (4x + 3)}{h}$$

$$f(3)$$

SECTIONS 2.2

THE GRAPH OF A
FUNCTION

OBJECTIVE 1

IDENTIFY THE GRAPH OF A FUNCTION

Theorem:

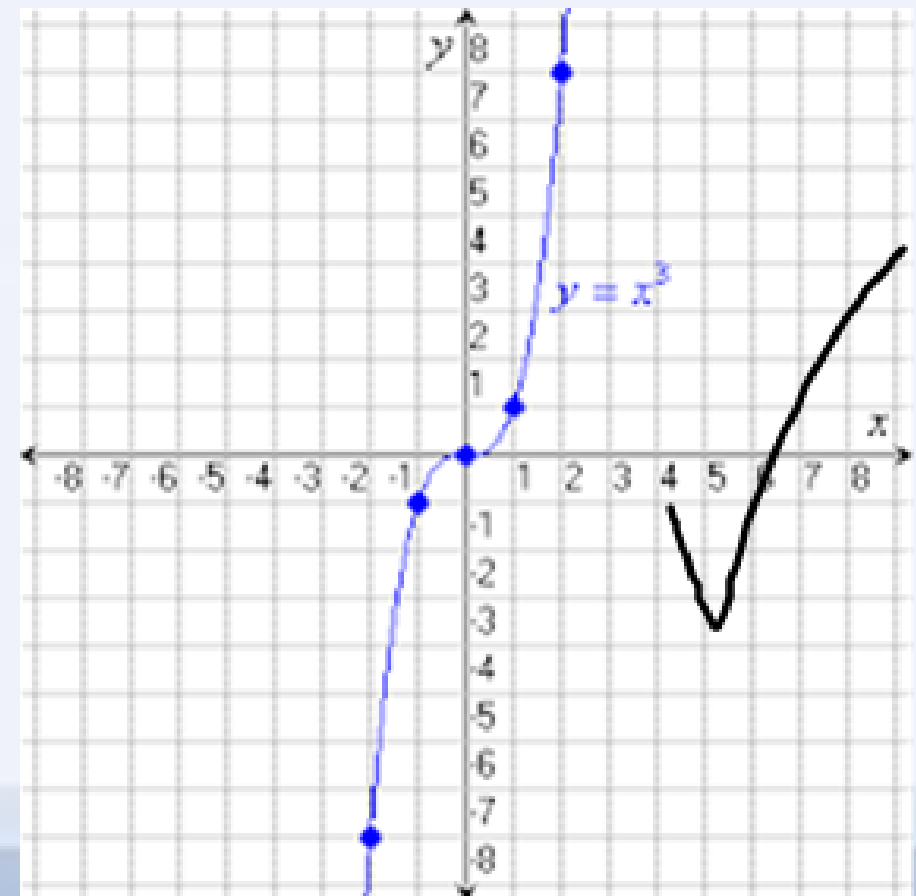
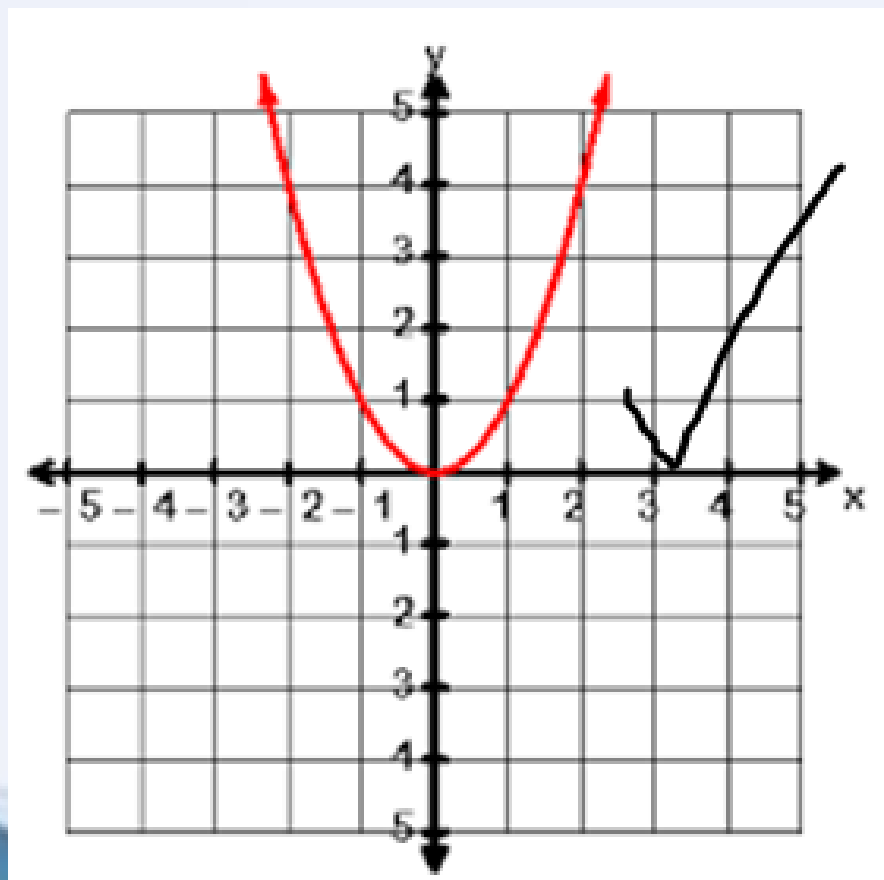
Vertical Line Test:

A set of points in the xy -plane is the graph of a function if and only if every vertical line intersects the graph in at most one point.

EXAMPLE.....

Identifying the Graph of a Function

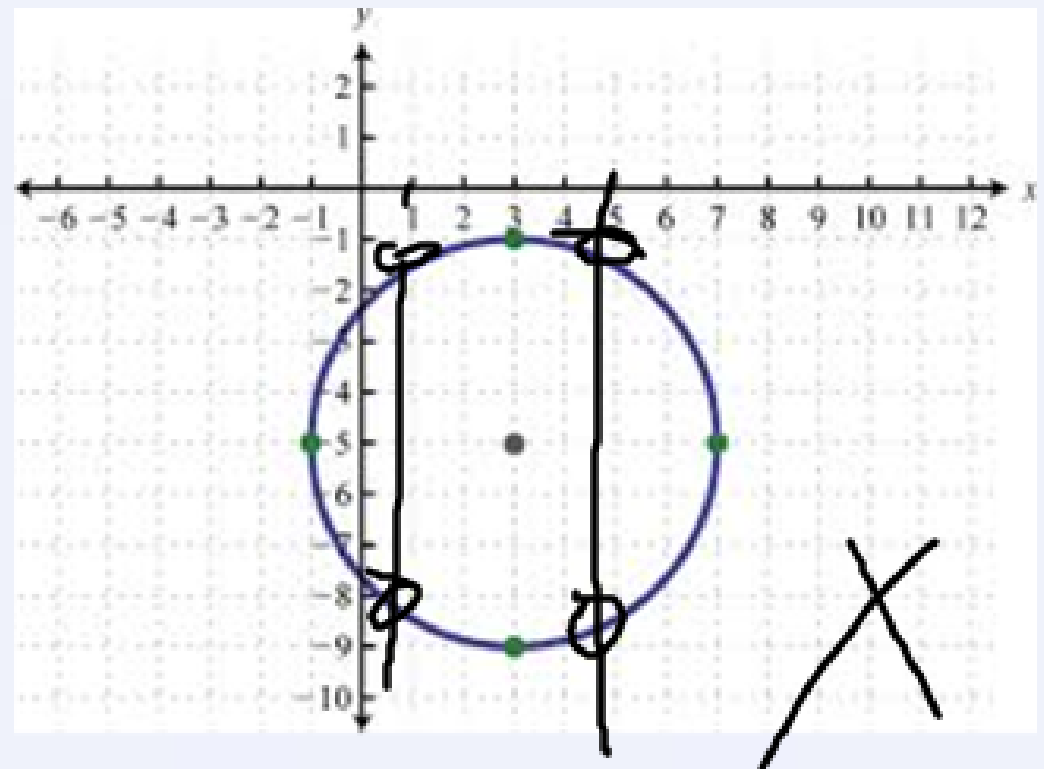
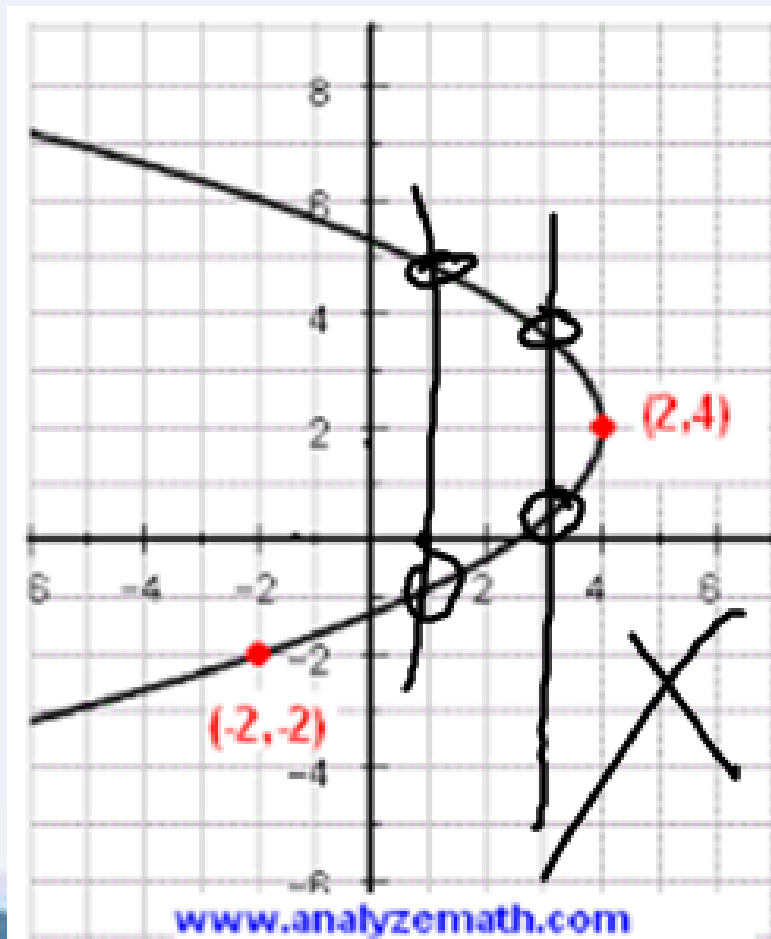
Which of the following are graphs of functions?



EXAMPLE.....

Identifying the Graph of a Function

Which of the following are graphs of functions?

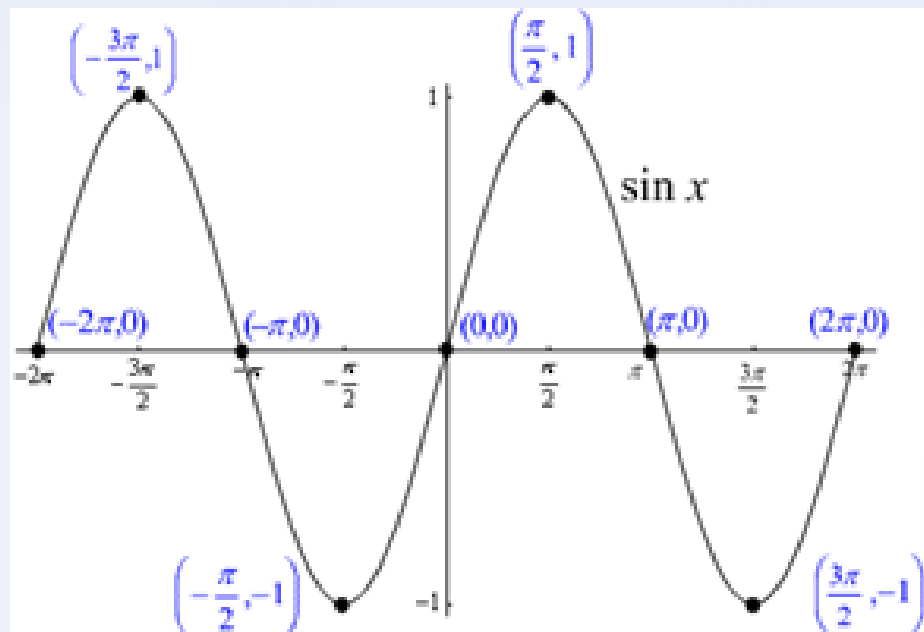


OBJECTIVE 2

**OBTAIN INFORMATION FROM OR ABOUT
THE GRAPH OF A FUNCTION**

EXAMPLE.....

Obtaining information from the graph of a function.



(a) What are $f(0)$, $f(\frac{3\pi}{2})$, and $f(3\pi)$?

(b) What is the domain of f ?

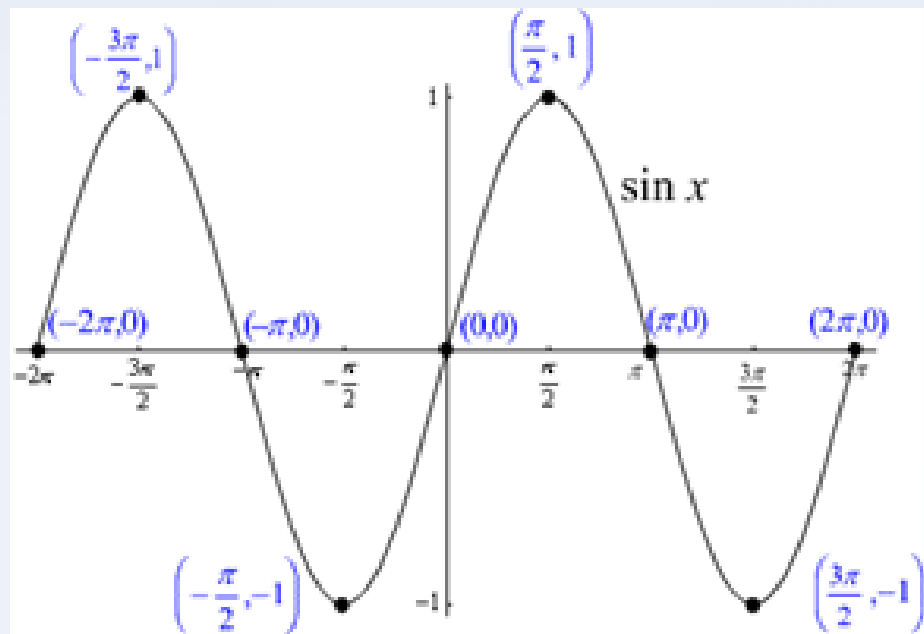
(c) What is the range of f ?

(d) How many times does the line $y=1$ intersect the graph?

(e) For what values of x does $f(x) = -1$?

EXAMPLE.....

Obtaining information from the graph of a function.



(a) What are $f(0)$, $f(\frac{3\pi}{2})$, and $f(3\pi)$

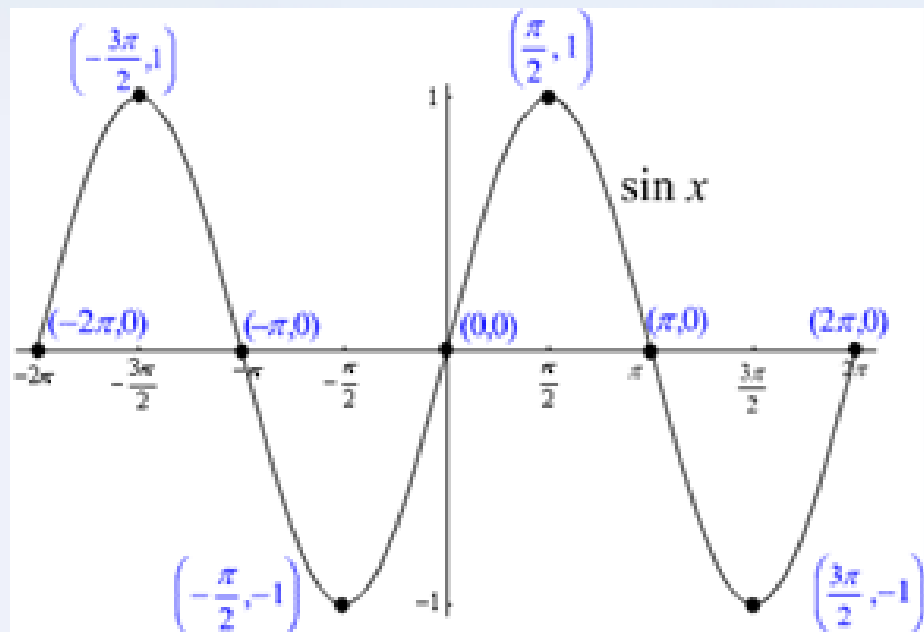
$$f(0) = 0$$

$$f\left(\frac{3\pi}{2}\right) = -1$$

$$f(3\pi) = 0$$

EXAMPLE.....

Obtaining information from the graph of a function.



(b) What is the domain of f ?

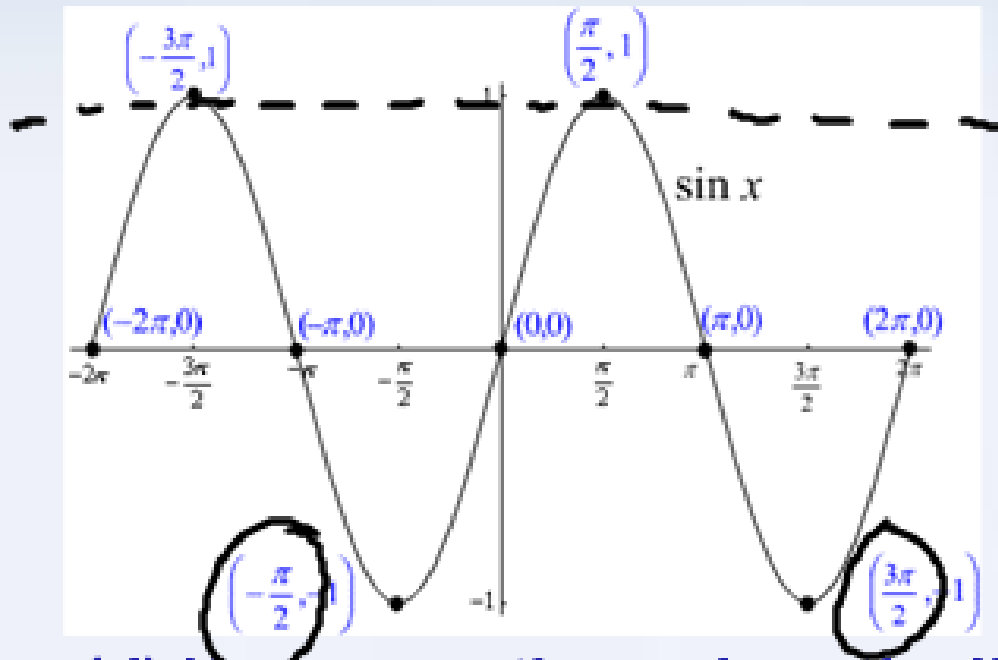
from, -2π
to 2π

(c) What is the range of f ?

From 1 to -1 .

EXAMPLE.....

Obtaining information from the graph of a function.



(d) How many times does the line $y=1$ intersect the graph?

twice.

(e) For what values of x does $f(x) = -1$?

$-\frac{\pi}{2}$ and $\frac{3\pi}{2}$

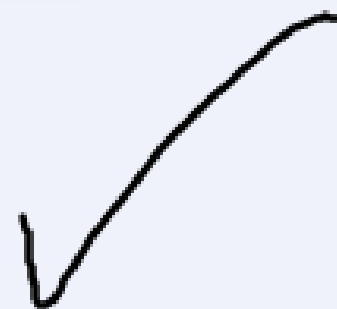
EXAMPLE.....

Obtaining information from the graph of a function.

Consider the Function $f(x) = \frac{x}{x+1}$

(a) Is the point $(1, \frac{1}{2})$ on the graph of f ?

$$\begin{aligned} f(1) &= \frac{1}{1+1} \\ &= \frac{1}{2} \end{aligned}$$



EXAMPLE.....

Obtaining information from the graph of a function.

Consider the Function $f(x) = \frac{x}{x+1}$

(b) If $x=2$, what is $f(x)$? What point is on the graph of f ?

$$\begin{aligned} f(2) &= \frac{2}{2+1} \\ &= \frac{2}{3} \end{aligned} \quad \begin{array}{l} (x, y) \\ (2, \frac{2}{3}) \end{array}$$

EXAMPLE.....

Obtaining information from the graph of a function.

Consider the Function $f(x) = \frac{x}{x+1}$

(c) If $f(x)=2$, what is x ? What point of on the graph of f ?

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

$$x = 2x + 2$$

$$\cancel{-x} = 2$$

$$x = -2$$

$$(-2, 2)$$

EXAMPLE.....

Average Cost Function.

The average cost C of manufacturing x computers per day is given by the function...

$$C(x) = 0.56x^2 - 34.39x + 1212.57 + \frac{20,000}{x}$$

Determine the average cost of manufacturing:

- (a) 30 computers in a day
- (b) 40 computers n a day
- (c) 50 computers in a day

EXIT TICKET

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