Precalculus Honors

Functions

LEARNING PLAN

(Chapter 1 & 2)

Name: _____

Date: _____

Period:____

G___

Skill/Understanding:	Review/Practice Problems
Inverse Functions ❑ I can write the equation of an inverse functions (making a "do/undo table" or the "x-y interchange" method). ❑ I can verify my functions are inverses by using a composition. ❑ I can determine two functions are inverses by looking at their graphs or tables. ❑ I understand that all graphs of inverses must have the line of symmetry $y = x$. ❑ I understand how the domain and range of inverses are related. ❑ I can restrict the domain of a function so that it is invertible, meaning its inverse is a function	1-84, 1-97, 1-123, 1-135, and CL 1-148.
Piecewise Functions ❑ I can graph a piecewise-defined function. ❑ I can evaluate values of a piecewise defined function given an input or output. ❑ I can determine whether a piecewise function is continuous or not.	1-96, 1-113, 1-126, 1-137, and CL 1-147.
Describing Graphs ❑ I can completely describe the graphs using appropriate vocabulary. ❑ I can identify where a graph is increasing/decreasing, concave up/concave down, and state the location(s) of maxima and minima. ❑ I can determine the domain and range when given a graph.	2-25, 2-50, 2-88, 2-130, and CL 2-164.
Even and Odd Functions ❑ I understand that an even function is symmetrical about the y-axis and that f(-x)=f(x) ❑ I understand that an odd function has rotational symmetry about the origin and f(-x)= -f(x). ❑ I can identify whether a function is even, odd or neither by looking at its graph. ❑ I can identify whether a function is even, odd or neither algebraically using its equation	2-22, 2-37, 2-79, 2-133, and CL 2-165.
Transformations ❑ I understand that if $y = f(x)$ is a function, then the transformations of the equation in graphing form can be written as: $y = a \cdot f(b(x - h)) + k$ ❑ I understand that (h, k) is the locator point and can help me graph transformed functions. ❑ I understand how the parameters *a, b, h* and *k* affect the graph of a transformed function. ❑ I can transformation functions when given the equation or graph. ❑ When given the description of a transformation I can write the equation and graph the function.	2-34, 2-49, 2-86, 2-141, and CL 2-167.

PRACTICE PROBLEMS:

1) Given the function $f(x) = 2\sqrt[3]{x+4} - 1$,

a. write the equation for $f^{-1}(x)$.

b. Make a table for $f(x)$ and $f^{-1}(x)$.

c. Graph $f(x)$ and $f^{-1}(x)$.

d. Use a composition of functions to verify that $f(x)$ and $f^{-1}(x)$. are inverses.

2) Given the piecewise function at right,

a. Evaluate:

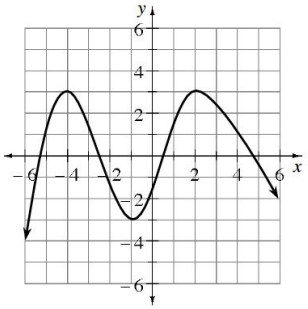
i. f(3)
ii. f(2)
iii. f(1)

$$f(x) = \begin{cases} x^2 & \text{if } x < 2 \\ 6 & \text{if } x = 2 \\ 10 - x & \text{if } x > 2 \end{cases}$$

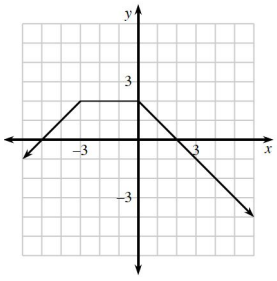
b. Graph f(x)

c. Is f(x) continuous?

3) Examine g(x) below. Determine the intervals on which it is increasing, decreasing, concave up and concave down. Also identify any maxima and/or minima and state whether they are local or global. In addition please also state the domain and range. Be sure to use mathematical notation.



4) Given g(x) at right, sketch y= -g(x - 1) + 2.



5) Determine which functions below are even, odd or neither.

PRACTICE PROBLEMS:

a. $f(x) = \frac{x^3 - 4x}{2x^5}$

b. $g(x) = 3(x-4)^2 + 7$

c.