PANTHER ALGEBRA

Chapter 3 Functions

Section 3.1 Defining Functions

Video 1:

Is the relation a function? If so, state the domain and range:

a) $\{(-3,5),(-3,2),(0,3),(1,7)\}$

b) $\{(-2,0),(1,8),(2,0),(5,3)\}$

Video 2:

Does the equation define y as a function of x?

a) $x+y^2=2$

b) $y=\dfrac{3x-1}{x+2}$

c) $y=x^2+1$

Video 3:

For the function, find f(0), f(-x), and f(x+h):

a) $f(x)=\dfrac{2x+3}{3x-1}$

Video 4:

Find the domain of each function:

a) $f(x)=x^2+3$

b) $g(x)=\dfrac{x}{x^2-9}$

c) $h(x)=\dfrac{2}{\sqrt{x-5}}$

d) $g(w)=\dfrac{\sqrt{w+7}}{w-3}$

Video 5:

For the pair of functions, find (f-g)(x) and (fg)(2):

$f(x)=3x+4\ ;\ g(x)=2x-5$

Video 6:

For the pair of functions, find (f/g)(1) and (fg)(x):

$f(x)=\sqrt{x+2}\ ;\ g(x)=\dfrac{1}{x}$

Video 7:

Find the difference quotient $\dfrac{f(x+h)-f(x)}{h}$

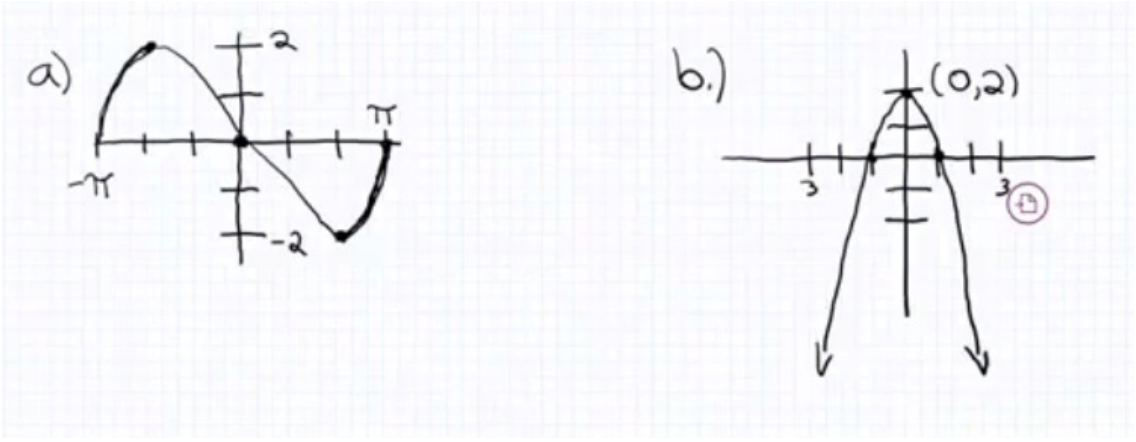
a) $f(x)=x^2-3x+1$

b) $f(x)=\sqrt{x+2}$

Section 3.2 Graphing Functions

Video 1:

Is the graph that of a function? If so, state the domain, range, intercepts, and symmetry



Video 2: Use the function below to answer the following questions $f(x)=\dfrac{x^2+1}{x+4}$

a) Is $\left(1,\frac{2}{5}\right)$ on the graph?

b) If $x=0$, what is $f(x)$?

c) If $f(x)=\dfrac{1}{2}$, what is x?

d) What is the domain of $f(x)$?

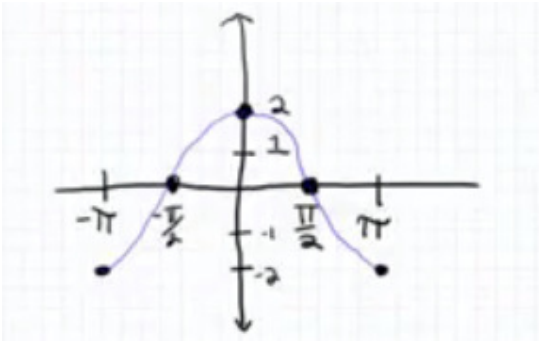
e) List the x intercepts

f) List the y intercepts

Section 3.3 Properties of Functions

Video 1:

Use the graph of function below to find the following



a) Intercepts

b) Domain and range

c) Intervals on which the graph increases, decreases, or is constant

d) Whether it is even, odd, or neither

Video 2:

Determine if the function is even, odd, or neither $f(x)=-2x+|x|$

Video 3:

Determine if the function is even, odd, or neither:

a) $f(x)=3x^4-x^2$

b) $h(x)=\dfrac{-x^5}{3x^2-7}$

c) $g(x)=3x^3+2$

Video 4:

Find the average rate of change: $\frac{\Delta y}{\Delta x} = \frac{f(b) - f(a)}{b - a}$

$g(x) = x^2 - 2x + 1$

a) From -1 to 1

b) From 0 to 3

c) From 3 to 4

Section 3.4 A Library of Functions

Video 1:

Graph the following functions: $h(x) = 5$, $g(x) = x$, $f(x) = x^2$, $h(x) = x^3$, $g(x) = \sqrt{x}$, $f(x) = |x|$, $g(x) = \frac{1}{x}$

Video 2:

Find the following: $f(-3), f(0), f(2)$

$$f(x)\begin{cases} -2x & x < 0 \\ 1 & x = 0 \\ 2x^2 - 1 & x > 0 \end{cases}$$

Video 3:

Graph the following and find the domain and range:

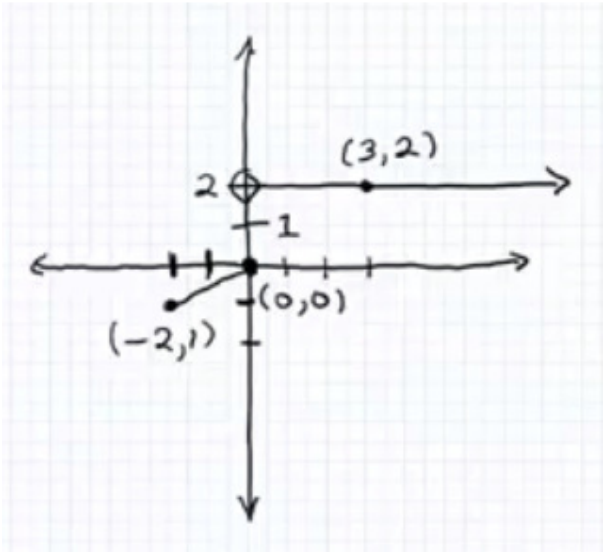
$$f(x) = \begin{cases} 2 - x \\ \sqrt{x} \end{cases}$$

If $-4 \le x < 1$

If $x > 1$

Video 4:

Write a definition for the function that is graphed below:



Section 3.5 Graphing Transformations

Video 1:

Graph the following: $y = x^2$, $y = x^2 + 3$, $y = (x-3)^2$, $y = -x^2 + 3$, $y = -(x+2)^2$, $y = 2x^2$, $y = (2x)^2$

Video 2:

Write a function whose graph is y= $|x|$ but is:

a) Shifted to do the right 4 units
b) Shifted down 4 units
c) Reflected across the x axis
d) Vertically stretched by a factor of 4
e) Horizontally stretched by a factor of 4

Video 3:

If the x-intercepts of $y = f(x)$ are -7 and 1:

a) What are the x-intercepts of $y = f(x+4)$
b) What are the x-intercepts of $y = f(x-3)$
c) What are the x-intercepts of $y = 2f(x)$
d) What are the x-intercepts of $y = f(-x)$

Video 4:

Graph the following functions

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

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

Section 3.6 Crating Functions

Video 1:

Let $P = (x, y)$ be a point on the graph of: $y = -x^2 - 4$

a) Express the distance d from P to the point $(0-2)$ as a function of x
b) What is d if $x = -2$

Video 2:

Let $P = (x, y)$ be a point on the graph of: $x^2 + y^2 = 9$