Algebra 2 Functions Unit Review

SHOW ALL WORK on the worksheet

Let $f(x) = \frac{2}{3}x - 4$, $g(x) = -2|x-5| + 4$, and $h(x) = \begin{cases} -\sqrt{x+4} - 2 & if\ x > 2 \\ 2(x-1)^3 + 5 & if\ x \leq 2 \end{cases}$, find:

1. $g(-1)$

$= -2|-1-5| + 4$
$= -2|-6| + 4$
$= -2(6) + 4$
$= -8$

2. $h(0)$

$= 2(0-1)^3 + 5$
$= 2(-1) + 5$
$= 3$

3. $f(-6)$

$= \frac{2}{3}(-6) - 4$
$= -4 - 4$
$= -8$

4. $h(5)$

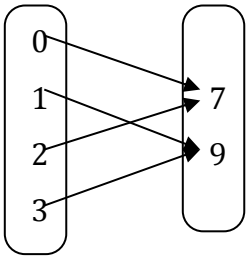
$= -\sqrt{5+4} - 2$
$= -\sqrt{9} - 2$
$= -3 - 2$
$= -5$

Determine if each relation is a function and explain

5. $\{(2,5), (-3,1), (0,4), (2,3), (-1,0)\}$

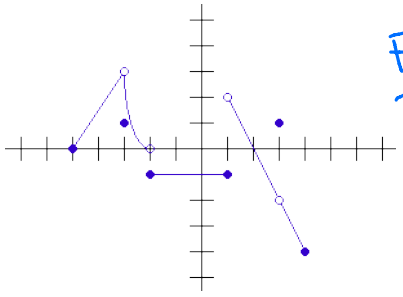
Not a function. Input of 2 has two different outputs

6. Input Output



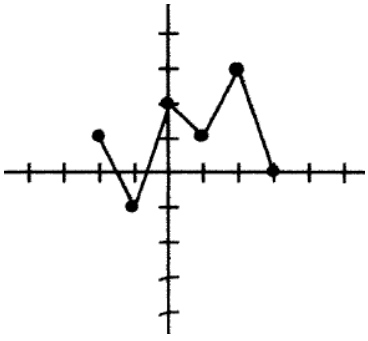
Function. Each input is paired with only one output

7.



Function. Passes the VLT

8. Determine the domain, range, intercepts, intervals of increase, intervals of decrease, maximums, minimums, end behavior, lines of symmetry, and if the function is even or odd based on the given graph



Domain: $[-2, 3]$

Range: $[-1, 3]$

x-int: $(-1.5, 0), (-.6, 0)$

y-int: $(0, 2)$

Increase: $(-1, 0), (1, 2)$

Decrease: $(-2, -1), (0, 1), (2, 3)$

End Behavior: None

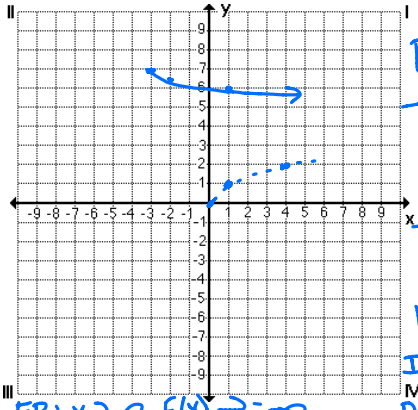
Lines of Symmetry: None

Even or Odd: Neither

Algebra 2 Functions Unit Review

Graph each function. State the parent function, transformation, and identify the key characteristics

9. $f(x) = -\frac{1}{2}\sqrt{x+3} + 7$



Parent: $y=\sqrt{x}$

Transformation: $-\frac{1}{2}\cdot y$, $\leftarrow 3$, $\uparrow 7$

D: $[-3,\infty)$

R: $(-\infty, 7]$

Inc: None

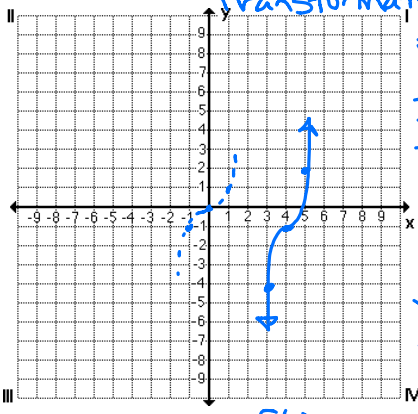
Decrease: $(-3,\infty)$

Max at $(-3,7)$

EB: $x\to\infty, f(x)\to-\infty$

y-int: $(0, -\frac{1}{2}\sqrt{3}+7)$

10. $j(x) = 3(x-4)^3 - 1$



Parent: $y=x^3$

Transformation: $3\cdot y$, $\rightarrow 4$, $\downarrow 1$

D: $\mathbb{R}$ R: $\mathbb{R}$

Increase: $\mathbb{R}$

Decrease: None

Max: None

Min: None

x-int: $(4.8, 0)$

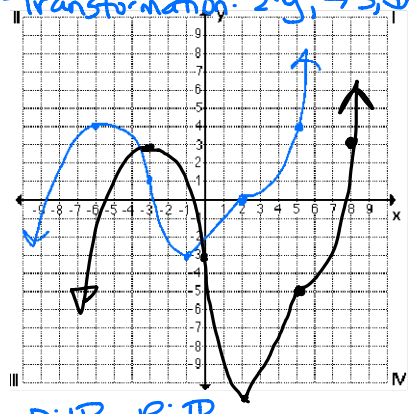
y-int: $(0, -193)$

EB: $x\to\infty, f(x)\to\infty$

$x\to-\infty, f(x)\to-\infty$

11. $y = 2f(x-3) - 5$

Transformation: $2\cdot y$, $\rightarrow 3$, $\downarrow 5$



D: $\mathbb{R}$ R: $\mathbb{R}$

Increase: $(-\infty, -3)$ $(2,\infty)$

Decrease: $(-3, 2)$

Max: $(-3, 3)$

Min: $(2, -11)$

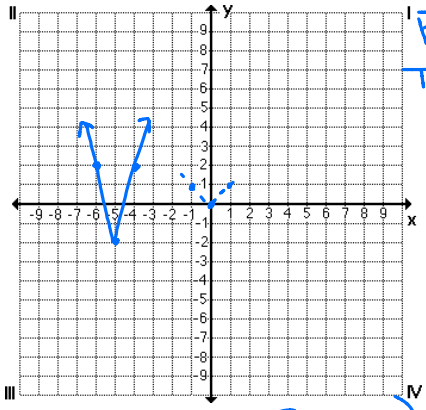
x-int: $(-5.5, 0)$, $(-.8, 0)$, $(7.9, 0)$

y-int: $(0, -3)$

EB: $x\to\infty, f(x)\to\infty$

$x\to-\infty, f(x)\to-\infty$

12. $r(x) = 4|x+5| - 2$



Parent: $y=|x|$

Trans: $4\cdot y$, $\leftarrow 5$, $\downarrow 2$

D: $\mathbb{R}$ R: $[-2,\infty)$

Increase: $(-5,\infty)$

Decrease: $(-\infty, -5)$

Max: None

Min: $(-5, -2)$

EB: $x\to\infty, f(x)\to\infty$

$x\to-\infty, f(x)\to\infty$