Precalculus
1.1-1.3 Review
*** Indicates Calculator OK!*

Name: Key
Period:

Don't forget about the 11 basic functions and all of their properties, including:

- ***Domain & Range***
- ***Increasing, Decreasing, Constant Intervals***
- ***Boundedness***
- ***Extrema (Local & Absolute Max/Min)***
- ***Even/Odd/Neither***

(#1-4) Use the following data to answer the following.
Despite Thanksgiving being almost three months away, you are already looking forward to all of the pumpkin pie. The table below shows the caloric intake for every slice of pumpkin pie you devour.

# of Slices	1	3	4	6	7	10
Caloric Intake	1005	1650	2000	2600	2930	3830

1. Use your calculator to find the line of best fit.

$y = 313.85x + 714.26$

2. Explain the meaning of the slope and y-intercept.

Slope: you consume 313.85 more calories after each slice of pie you eat

y-int: before you've eaten any pie, you've already consumed 714.26 cal

3. Predict your caloric intake if you ate 2.5 slices of pumpkin pie.

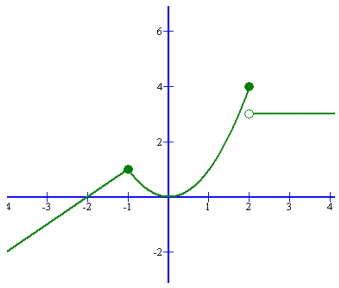
~1498.89 calories

4. Is a line a good representation of the data? Explain!

Yes! r = .999 ... it's almost perfect!

(#5-7) Identify whether each of the following is a function or relation.

5.



Function
(vert. line test)

6. $x^2 + y^2 = 16$

Relation

$y^2 = 16 - x^2$

$y = \sqrt{16 - x^2}$

one input... 2 outputs

7.

x	-2	-1	0	1	2
f(x)	9	6	5	6	9

Function!
It's ok for 2 x's to share the same y!

(#8-10) Find the domain of the function algebraically. State the answer in interval notation.

8. $y = \sqrt{25 - x^2}$

$25 - x^2 \geq 0$

$(5-x)(5+x) \geq 0$

$[-5, 5]$

9. $y = \sqrt{x^4 - 36x^2}$

$x^4 - 36x^2 \geq 0$

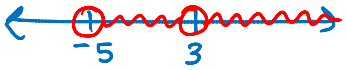
$x^2(x+6)(x-6) \geq 0$

$(-\infty, -6] \cup \{0\} \cup [6, \infty)$

10. $y = \dfrac{x+3}{(x-3)\sqrt{x+5}}$

$x \neq 3$ $\quad$ $x + 5 > 0$

$x > -5$



$(-5, 3) \cup (3, \infty)$

(#11-13) State the domain and range of each function using interval notation. ***You may use your calculator to find the range**, but NOT the domain.***

11. $y = 3x^2 + 18$

Domain: $(-\infty, \infty)$

Range: $[18, \infty)$

12. $y = -2|x| + 1$

Domain: $(-\infty, \infty)$

Range: $(-\infty, 1]$

13. $y = \sqrt{2x-9} + 3$

$2x - 9 \geq 0$

$x \geq 9/2$

Domain: $[9/2, \infty)$

Range: $[3, \infty)$

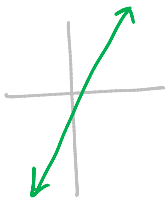
(#14-16) Classify the following functions as even, odd or neither. Do so both graphically and algebraically.**

14. $y = 5x - 1$

$5(-x) - 1$

$-5x - 1$

Neither

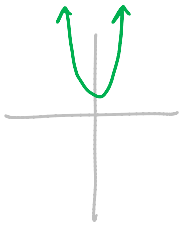


15. $y = 3x^2 + 18$

$3(-x)^2 + 18$

$3x^2 + 18$

Even!

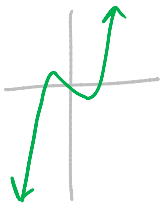


16. $y = x^3 - x$

$(-x)^3 - (-x)$

$-x^3 + x$

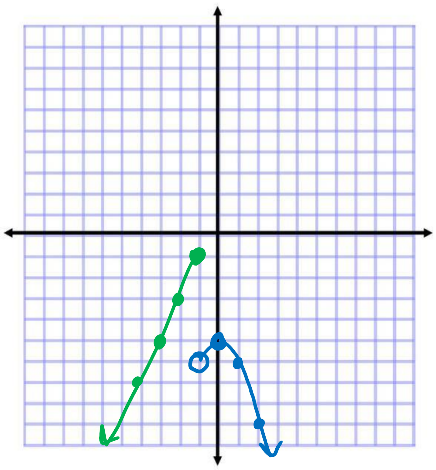
odd!



17. Graph the following piecewise function: $f(x) = \begin{cases} -x^2 - 5, x > -1 \\ 2x + 1, x \leq -1 \end{cases}$

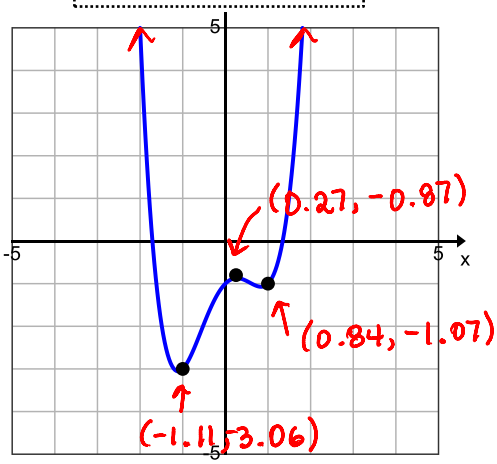
x	f(x)
-1	-6
0	-5
1	-6
2	-9

x	f(x)
-1	-1
-2	-3
-3	-5
-4	-7



(#17-21) Use the graph below to evaluate the following:**

$y = x^4 - 2x^2 + x - 1$



17. *(Circle One)*: Even / Odd / Neither

18. *(Circle One)*: Bounded Above / Bounded Below / Bounded

@ $y = -3$

19. *Intervals of*:

Increasing: $[-1.11, 0.27] \cup [.84, \infty)$

Decreasing: $(-\infty, -1.11] \cup [0.27, 0.84]$

20. *Relative*: Max: $y = -0.87$ @ $x = 0.27$

Min: $y = -3.06$ @ $x = -1.11$, $y = -1.07$ @ $x = 0.84$

21. *Absolute*: Max: DNE

Min: $y = -3.06$ @ $x = -1.11$