

# Honors Precalculus Summer Packet

## Mrs. Rasso

This assignment is designed to be a review of topics covered in Honors Advanced Algebra. Some of the questions may go beyond what you have seen this year however, you will be able to apply the skills you have to answer these questions. Please complete the packet prior to the first day of class. **The answers are provided** so that you can check your work. Do not use the answers provided to put yourself at a disadvantage, understand that you are responsible for the information in the packet and it will not be re-taught in Honors Precalculus. Showing your work and making your thinking visual is extremely important. Notation used in the provided answers is the expected notation in Honors Precalculus.

- You can reach Mrs. Rasso with questions over the summer through REMIND @sumquest This is the easiest way for me to answer questions.
  - You can also email me at [jrasso@dupage88.net](mailto:jrasso@dupage88.net) and I will attempt to answer your questions as best I can through email.
  - Please keep your notes from Advanced Algebra and use them to assist you with these topics.
  - [www.khanacademy.org](http://www.khanacademy.org) is a great resource that can provide you with additional instruction on many topics if needed.
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Honors Precalculus  
Summer Work

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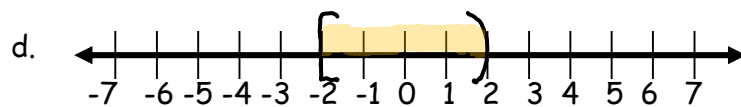
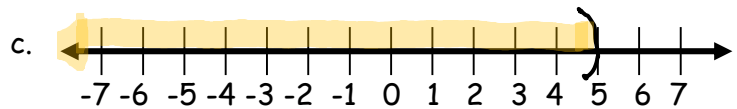
Summer work is a review of topics that have been previously covered in Honors Advanced Algebra. You are responsible for the topics in this packet. We will expand on these topics as we move through the semester and you will be assessed on them throughout the semester.

**Interval Notation - Real Numbers - This is also the format we use to graph intervals.**

1. Use an inequality to describe the interval of real numbers.

a.  $[-1,1)$

b.  $(-\infty,4]$



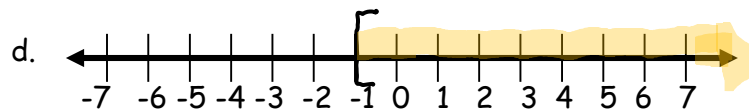
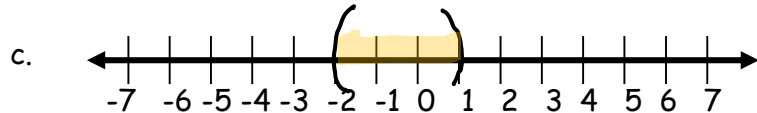
e.  $x$  is between  $-1$  and  $2$

f.  $x$  is greater than or equal to  $5$

2. Use interval notation to describe the interval of real numbers. Note the format used to graph.

a.  $x > -3$

b.  $-7 < x < -2$



e.  $x$  is greater than  $-3$  and less than or equal to  $4$

f.  $x$  is positive

3. Convert to inequality notation.

a.  $(-3,4]$

b.  $(-3, -1)$

c.  $(-\infty,5)$

d.  $[-6,\infty)$

**Equation Solving**

Solve the equations algebraically and check graphically. Provide a sketch of the check.

Exact answers only!!

4.  $v^2 - 5 = 8 - 2v^2$

5.  $(x+11)^2 = 121$

6.  $2x^2 - 5x + 2 = (x-3)(x-2) + 3x$

7.  $x^2 - 7x - \frac{3}{4} = 0$

8.  $x(2x-5) = 12$

9.  $x(x+7) = 14$

10.  $x^2 - 3x + 4 = 2x^2 - 7x - 8$

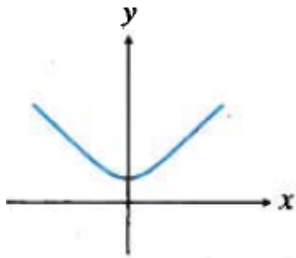
11.  $x+1 - 2\sqrt{x+4} = 0$

12.  $\sqrt{x} + x = 1$

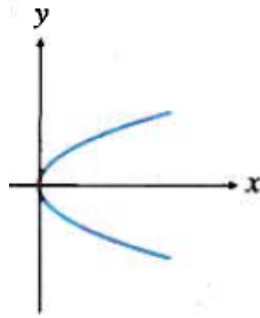
### Building Functions from functions

Determine whether the curve is the graph of a function.

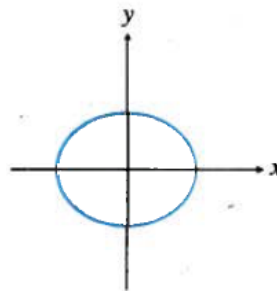
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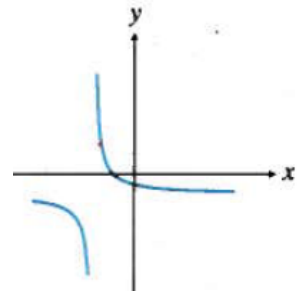
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15.



16.

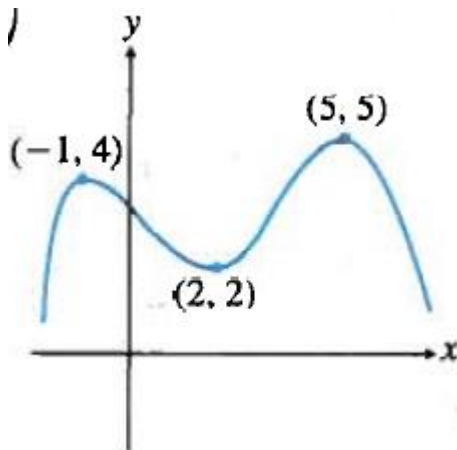


17. Find the domain of the function and support your answer graphically (include the sketch of your calculator screen). State the domain using interval notation.

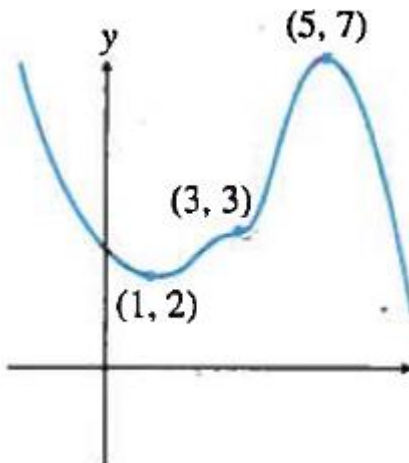
a.  $f(x) = x^2 + 4$

18. State whether each labeled point identifies a local minimum, a local maximum, or neither. Identify intervals (using interval notation) on which the function is decreasing and increasing.

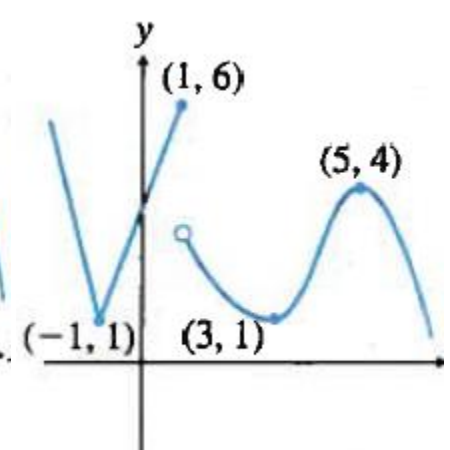
a.



b.



c.



19. Find formulas for the functions  $f + g$ ,  $f - g$ , and  $fg$ . State the domain of each.

a.  $f(x) = 2x - 1$   
 $g(x) = x^2$

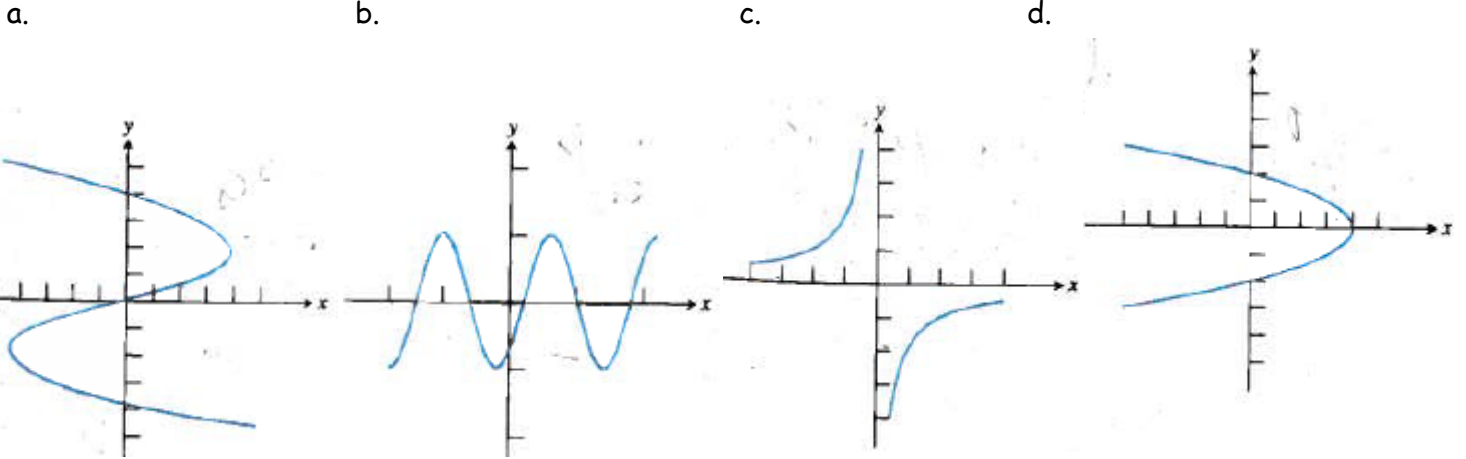
b.  $f(x) = (x - 1)^2$   
 $g(x) = 3 - x$

20. Find  $(f \circ g)(3)$  and  $(g \circ f)(-2)$  \*\*\*\*\*this notation is the same as  $f(g(3))$

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

b.  $f(x) = x^2 + 4$   
 $g(x) = \sqrt{x + 1}$

21. The graph of a relation is shown. (a) Is the relation a function? (b) Does the relation have an inverse that is a function?



22. Find the vertex and axis of symmetry of the graph of the function.

a.  $f(x) = 3(x-1)^2 + 5$       b.  $f(x) = 5(x-1)^2 - 7$

23. Find the vertex and axis of symmetry of the graph of the function. Using any method rewrite the function in vertex form.

a.  $f(x) = 3x^2 + 5x - 4$     b.  $f(x) = 8x - x^2 + 3$     c.  $g(x) = 5x^2 + 4 - 6x$

24. Use completing the square to put the function in vertex form.

a.  $f(x) = x^2 - 4x + 6$       b.  $f(x) = 10 - 16x - x^2$       c.  $f(x) = 2x^2 + 6x + 7$

25. Find the zeros of the function algebraically.

a.  $f(x) = x^2 + 2x - 8$       b.  $f(x) = 9x^2 - 3x - 2$       c.  $f(x) = 3x^3 - x^2 - 2x$