Hello future AP Calculus BC students!

I hope you and your families are doing well and congratulations on almost finishing the school year!

I am looking forward to our class next year. Calculus BC replaces a full year of college calculus (Calc I and Calc II). This leaves us very little time to review Pre-Calculus at the beginning of the year, so we won't. Several high schools have students take 2 full years of calculus before taking the BC exam. John Carroll's BC curriculum gets it done in 1 year which gives you the chance to take AP Statistics as a senior, or you had the chance to solidify some of your Geometry skills during your sophomore year which also has its advantages.

Your summer assignment is intended to prepare you to begin calculus topics as soon as the school year begins again in the fall. All of these assignments must be completed pictures of them should be emailed to me by 11:59 pm on Monday August 22. You will complete these assignments by watching videos posted on Edpuzzle and using that information to solve the problems on the assignments. The assignments will cover parametrics, which is likely one of the last topics you covered in Pre-Calculus and one that will come up again as we progress through the BC curriculum. The assignments will also require you to use some of your basic knowledge of trigonometry, which will be tested often during the course.

Please complete the assignments on the documents that have been prepared for it. These include allotted space for each problem. Please email pictures of your completed assignment to me. I will have them graded and ready to return to you on our day of class together. You must show your work and it will be graded for accuracy.

The class Edpuzzle page has already been set up and you may begin working on these assignments whenever you would like. Here is the link to join:

https://edpuzzle.com/join/osukeze

The class code is **osukeze**

There are several videos that will be available at the site for you as a resource over the course of the school year. I will explain more about this during our first class together.

I am also **suggesting** that you review a few pre-calculus topics over the summer. The packet **"R U Ready for Some Calculus? A Precalculus Review"** is broken up into sections that are denoted with the letters A through T. Each section has an explanation of the topic, some example problems with answers included, and an assignment that does not include the answers. I am suggesting you review all topics in that packet and try a few problems from each packet. I will not collect your work on that, but it will be your responsibility to be well-versed in those topics by the beginning of the school year. Do not hesitate to reach out to me if you have any questions on any of those topics and would like some clarification. We will not take class time to review them.

Here is an itemized list of your summer assignment:

1. Join our Edpuzzle class with https://edpuzzle.com/join/osukeze
2. Watch the video for Chapter 1 Topic 1. (Required and due by 11:59 pm on 8/22/22)
3. Complete Homework Assignment 1 and email me pictures of your work on the document prepared for this. (Required and due by 11:59 pm on 8/22/22)
4. Watch the video for Chapter 1 Topic 2. (Required and due by 11:59 pm on 8/22/22)
5. Complete Homework Assignment 2 and email me pictures of your work on the document prepared for this. (Required and due by 11:59 pm on 8/22/22)
6. Review the packet **"R U Ready for Some Calculus? A Precalculus Review"** and do practice problems from each topic. (Suggested)

The textbook we use for this course is the 3rd edition of "Calculus: Graphical, Numerical, Algebraic" by Finney, Demana, Waitts, and Kennedy. Here is a link to it on Amazon.

https://www.amazon.com/Calculus-Graphical-Numerical-Algebraic-3rd/dp/0132014084/ref=sr_1_2?crid=3O5S59OUF1V2P&dchild=1&keywords=calculus+finney+demana+waits+kennedy&qid=1622729350&sprefix=finney+demana+%2Caps%2C134&sr=8-2

We have a pdf of the textbook that I will send to you in a separate email. It's a large file so I don't want to include it in the same email. This pdf will also be posted on our Veracross page in the fall. You can buy yourself a hard copy of the text if you would like to have that to flip through in addition to the pdf. We will follow the textbook very closely, but I will have copies of all the problems and examples to project in class, so you won't ever have to bring it to class.

I hope you have a great summer and I'm looking forward to our class together in the fall. Please let me know if you have any questions.

One last thing, please email me so I know you have received the assignment.

In our first class meeting, we will review course policies, then jump right into our first AP Calculus topic, which will be Limits.

Thank you!
Mrs. Von Lange
cvonlange@johncarroll.org

Name _____

AP Calculus BC Homework Assignment 1

Chapter 1 Topic 1: Relations; Parametrizing Line Segments and Other Curves
Pg. 34 #s 18-26 even, 30, 32, 40, 42

In Exercises 18-22 even, a parametrization is given for a curve.

a) Graph the curve. What are the initial and terminal points, if any? Indicate the direction in which the curve is traced.
b) Find a Cartesian equation for a curve that contains the parametrized curve. What portion of the graph of the Cartesian equation is traced by the parametrized curve?

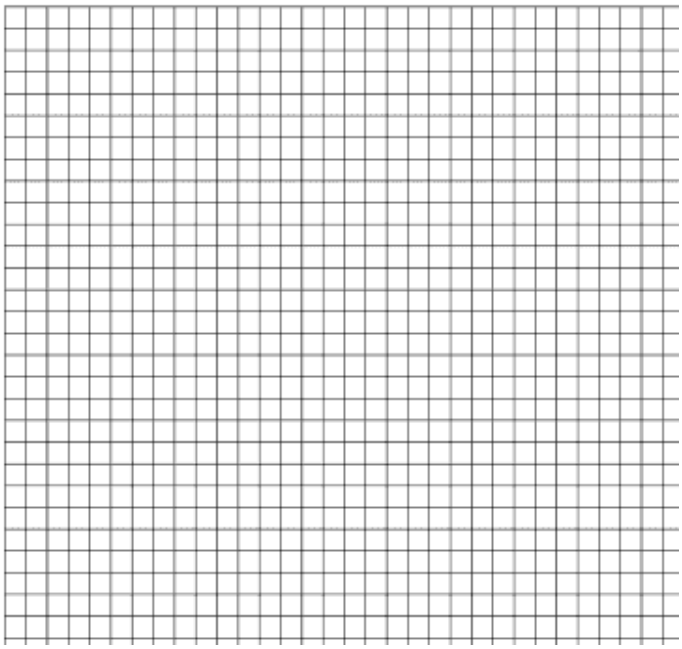
18. $x = 3 - 3t, \quad y = 2t, \quad 0 \leq t \leq 1$

Initial Point _____ Terminal Point _____

Cartesian equation for curve that contains parametrized curve:

What portion of the graph of the Cartesian equation is traced by the parametrized curve?

Graph for 18. Indicate direction curve is traced.



Work for 18

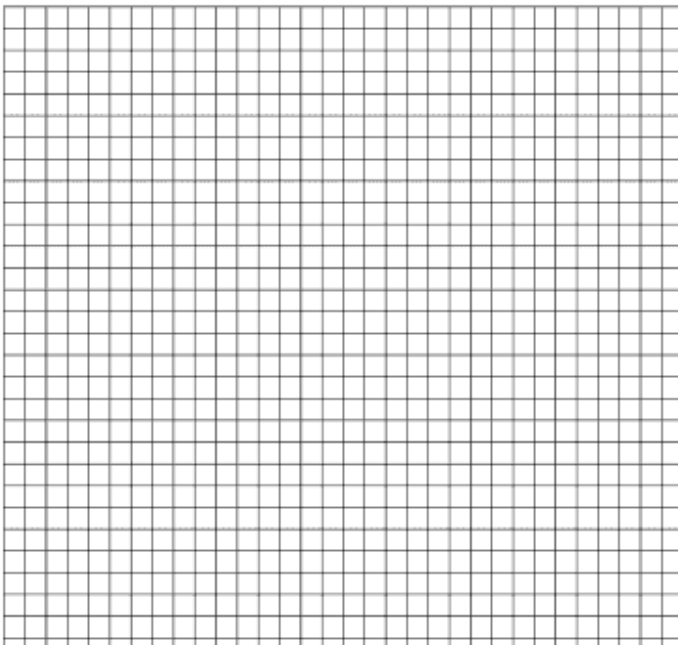
20. $x = t^2, \quad y = \sqrt{4 - t^2}, \quad 0 \leq t \leq 2$

Initial Point _____ Terminal Point _____

Cartesian equation for curve that contains parametrized curve:

What portion of the graph of the Cartesian equation is traced by the parametrized curve?

Graph for 20. Indicate direction curve is traced.



Work for 20

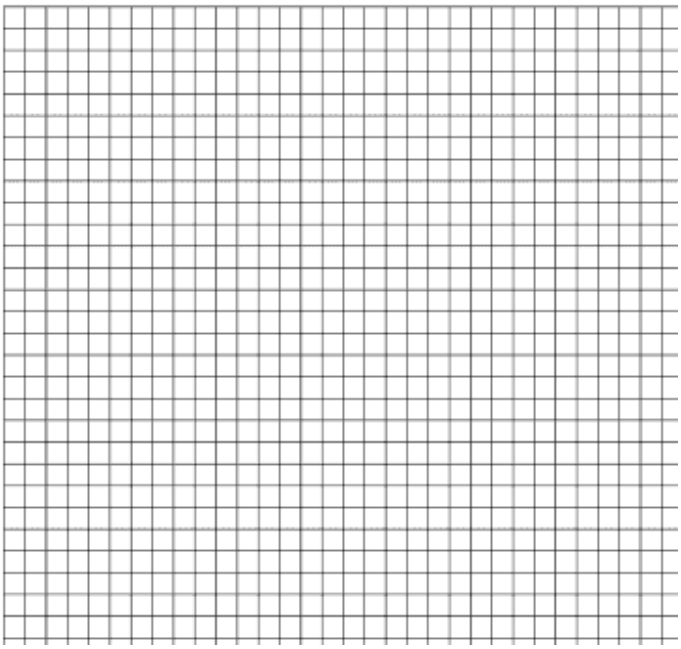
22. $x = t^2 - 3, \quad y = t, \quad t \leq 0$

Initial Point _____ Terminal Point _____

Cartesian equation for curve that contains parametrized curve:

What portion of the graph of the Cartesian equation is traced by the parametrized curve?

Graph for 22. Indicate direction curve is traced.



Work for 22

In Exercises 24 and 26, find a parametrization of the curve.

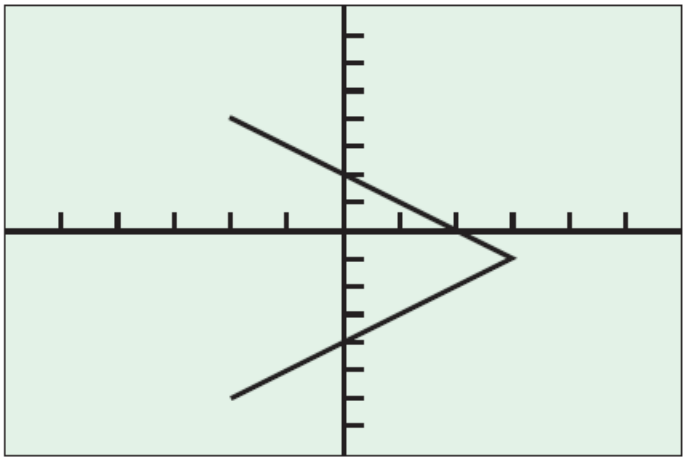
24. the line segment with endpoints (-1, 3) and (3, -2)

$x =$ $y =$ $interval$:

26. the left half of the parabola $y = x^2 + 2x$

$x =$ $y =$ $interval$:

In exercises 30 and 32, refer to the graph of $x = 3 - |t|,\ y = t - 1,\ -5 \le t \le 5$ shown in the figure below. Find the values of t that produce the graph in the given quadrant.



[–6, 6] by [–8, 8]

30. Quadrant II	32. Quadrant IV
40. Multiple Choice Which of the following is the initial point of the curve? **(A)** $(-5, 6)$ **(B)** $(0, -3)$ **(C)** $(0, 3)$ **(D)** $(5, 0)$ **(E)** $(10, -3)$ In Exercises 39 and 40, use the parametric curve $x = 5t, y = 3 - 3t, 0 \le t \le 1$.	**42. Multiple Choice** Which of the following describes the graph of the parametric curve $x = 3t, y = 2t, t \ge 1$? **(A)** circle **(B)** parabola **(C)** line segment **(D)** line **(E)** ray

Name _____

AP Calculus BC Homework Assignment 2

Chapter 1 Topic 2: Parametrizing Circles and Ellipses

Pg. 34 #s 10 – 14 even, 36, 38

In Exercises 10-14 even, a parametrization is given for a curve.

c) Graph the curve. What are the initial and terminal points, if any? Indicate the direction in which the curve is traced.

d) Find a Cartesian equation for a curve that contains the parametrized curve. What portion of the graph of the Cartesian equation is traced by the parametrized curve?

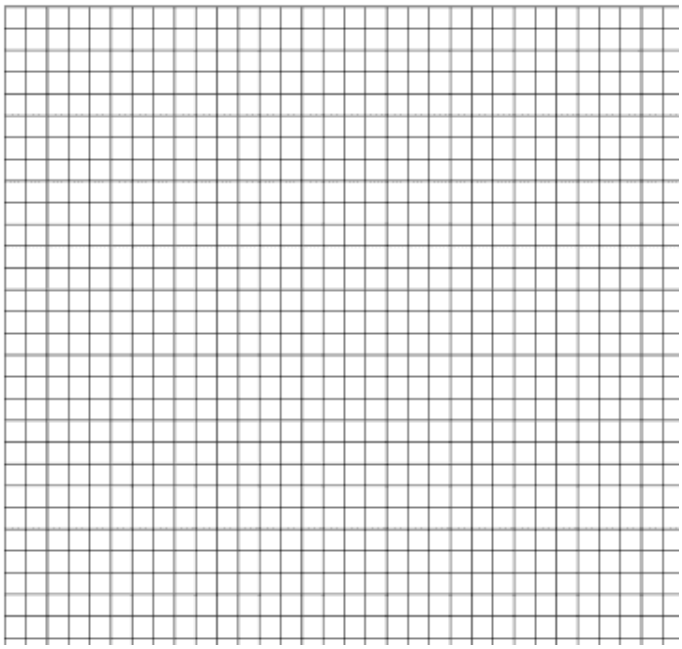
10. $x = \sin(2\pi t), \quad y = \cos(2\pi t), \quad 0 \le t \le 1$

Initial Point _____ Terminal Point _____

Cartesian equation for curve that contains parametrized curve:

What portion of the graph of the Cartesian equation is traced by the parametrized curve?

Graph for 10. Indicate direction curve is traced.



Work for 10

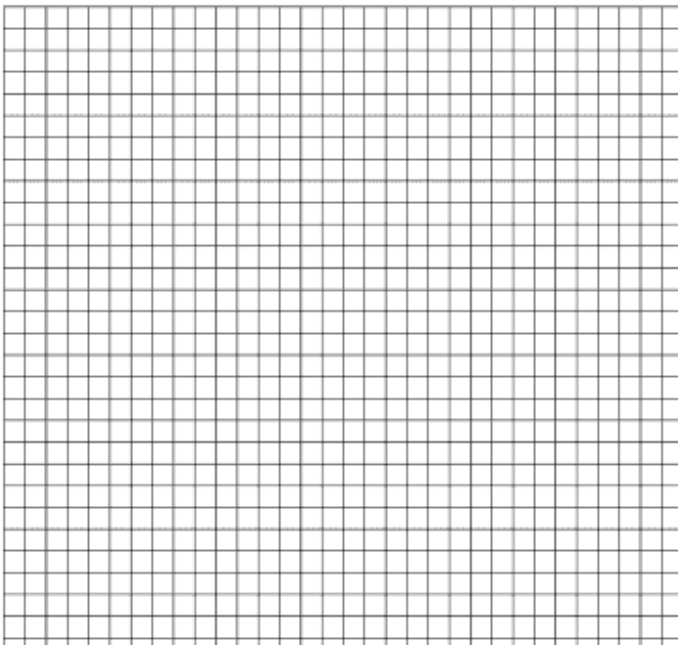
12. $x = 4\cos t\,, \quad y = 2\sin t\,, \quad 0 \le t \le 2\pi$

Initial Point _____ Terminal Point _____

Cartesian equation for curve that contains parametrized curve:

What portion of the graph of the Cartesian equation is traced by the parametrized curve?

Graph for 12. Indicate direction curve is traced.



Work for 12

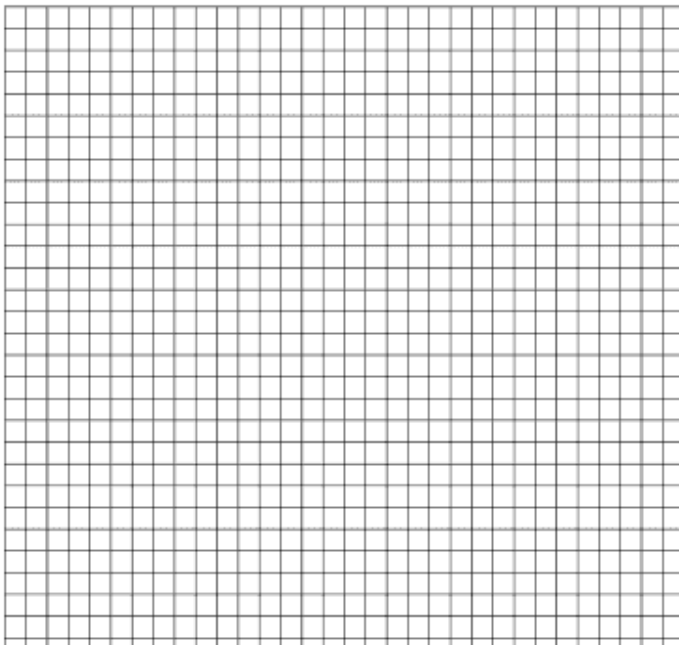
14. $x = 4\sin t\,,\quad y = 5\cos t\,,\quad 0 \le t \le 2\pi$

Initial Point _____ Terminal Point _____

Cartesian equation for curve that contains parametrized curve:

What portion of the graph of the Cartesian equation is traced by the parametrized curve?

Graph for 14. Indicate direction curve is traced.



Work for 14

36. Find parametrizations to model the motion of a particle that starts at (-a, 0) and traces the ellipse

$$\left(\frac{x}{a}\right)^2 + \left(\frac{y}{b}\right)^2 = 1, \qquad a > 0, \qquad b > 0$$

as indicated.

a) once clockwise

$x =$ $y =$ $interval$:

b) once counterclockwise

$x =$ $y =$ $interval$:

c) twice clockwise

$x =$ $y =$ $interval$:

d) twice counterclockwise

$x =$ $y =$ $interval$:

38. True or False The parametric curve $x = 2\cos(-t)$, $y = 2\sin(-t)$, $0 \le t \le 2\pi$ is traced clockwise. Justify your answer.