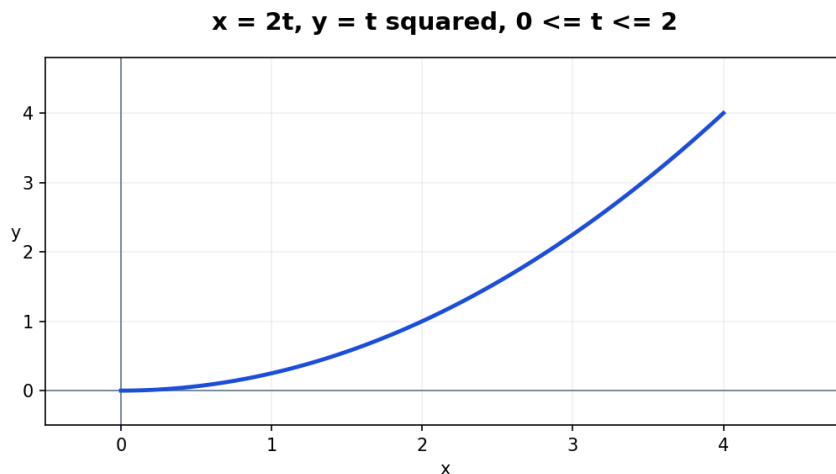


Problems | Name: _____

4.1 Parametric Equations

Additional course content; not assessed on the AP Precalculus Exam.

4.1.1. For $x = 2t$, $y = t^2$, $0 \leq t \leq 2$, eliminate t and state the domain and direction.



Code Scholars Tutoring | codescholarstutoring.com

Elimination gives $y = x^2 / 4$, with x restricted to $[0,4]$.

4.1.2. For $x = 3\cos t$, $y = 2\sin t$, eliminate t .

4.1.3. Why does eliminating t from $x = t^2$, $y = t^2$ not give the entire line $y = x$?

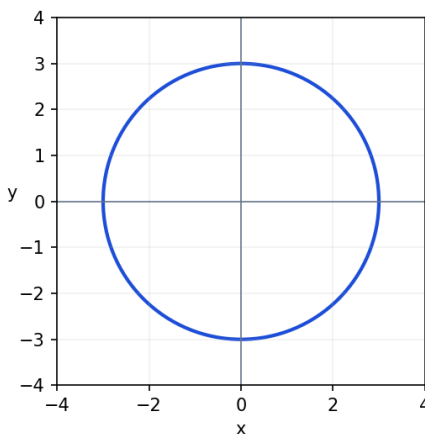
Problems | Name: _____

4.2 Implicitly Defined Curves

Additional course content; not assessed on the AP Precalculus Exam.

4.2.1. For $x^2 + y^2 = 9$, find all y -values when $x = 0$ and when $x = 3$.

Implicit curve: $x^2 + y^2 = 9$



Code Scholars Tutoring | codescholarstutoring.com

The full circle fails the vertical-line test for a function of x .

4.2.2. Solve $xy = 6$ for y and state the domain.

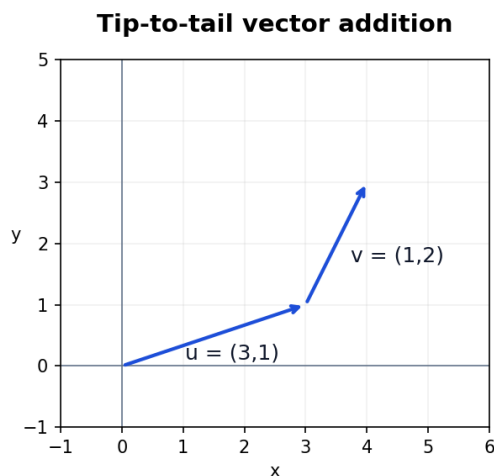
4.2.3. Does $x = y^2$ define y as a function of x over all its real points?

Problems | Name: _____

4.3 Vectors

Additional course content; not assessed on the AP Precalculus Exam.

4.3.1. A displacement is $\mathbf{u} = (3, 1)$ followed by $\mathbf{v} = (1, 2)$. Find the resultant and its magnitude.



Place the second vector at the tip of the first.

4.3.2. Find a unit vector in the direction $(6, 8)$.

4.3.3. Compute $(2, 1) \cdot (-1, 2)$ and interpret the result.

Problems | Name: _____

4.4 Matrix Operations

Additional course content; not assessed on the AP Precalculus Exam.

4.4.1. Compute $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} \begin{pmatrix} 2 \\ 1 \end{pmatrix}$.

4.4.2. Add $\begin{pmatrix} 1 & -1 \\ 0 & 2 \end{pmatrix}$ and $\begin{pmatrix} 3 & 2 \\ 4 & -2 \end{pmatrix}$.

4.4.3. Why is a 2×3 matrix times a 2×2 matrix undefined?

Problems | Name: _____

4.5 Determinants and Invertibility

Additional course content; not assessed on the AP Precalculus Exam.

4.5.1. Find the inverse of $\begin{pmatrix} 2 & 0 \\ 0 & 3 \end{pmatrix}$.

4.5.2. For what k is $\begin{pmatrix} k & 2 \\ 3 & 6 \end{pmatrix}$ singular?

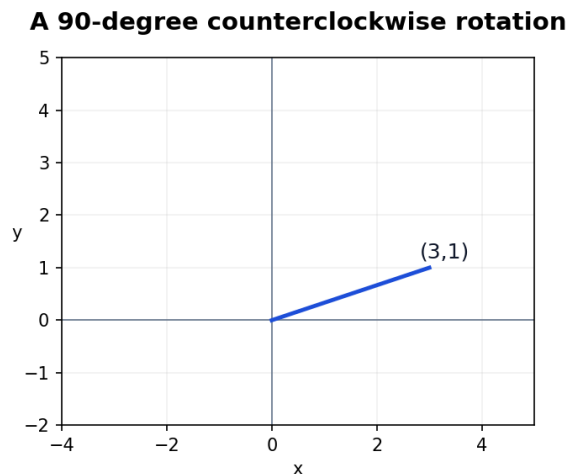
4.5.3. A planar linear transformation has determinant -3 . What happens to area and orientation?

Problems | Name: _____

4.6 Linear Transformations

Additional course content; not assessed on the AP Precalculus Exam.

4.6.1. Apply the 90° counterclockwise rotation matrix to the vector $(3, 1)$.



Code Scholars Tutoring | codescholarstutoring.com

A rotation about the origin maps (x, y) to $(-y, x)$.

4.6.2. Give the matrix of reflection across the x-axis and apply it to $(2, 5)$.

4.6.3. Explain why $T(x, y) = (x + 2, y)$ is not linear.