 Transformations of trigonometric functions

Activity 1 –amplitude

For each equation, state its amplitude and range, then sketch the graph on the Cartesian plane.

Amplitude =

Range =



Amplitude =

Range =



Amplitude =

Range =



Amplitude =

Range =



Activity 2 – period

For each equation, state its period, then sketch the graph on the Cartesian plane.

Period =



Period =



Period =



Period =



Activity 3 – vertical shift

For each equation, state its vertical shift and range, then sketch the graph on the Cartesian plane.

Vertical shift =

Range =



Vertical shift =

Range =



Vertical shift =

Range =



Vertical shift =

Range =



Activity 4 – phase

Horizontal shift =



Horizontal shift =



Horizontal shift =



Horizontal shift =



Activity 5 – composite transformations

Students complete the table for the trigonometric equation then graph the function.

2 sample questions are provided.

Copy the page and change the equation to create additional questions.

Question 1

Equation:

Amplitude =

Period =

Vertical shift =

Phase =

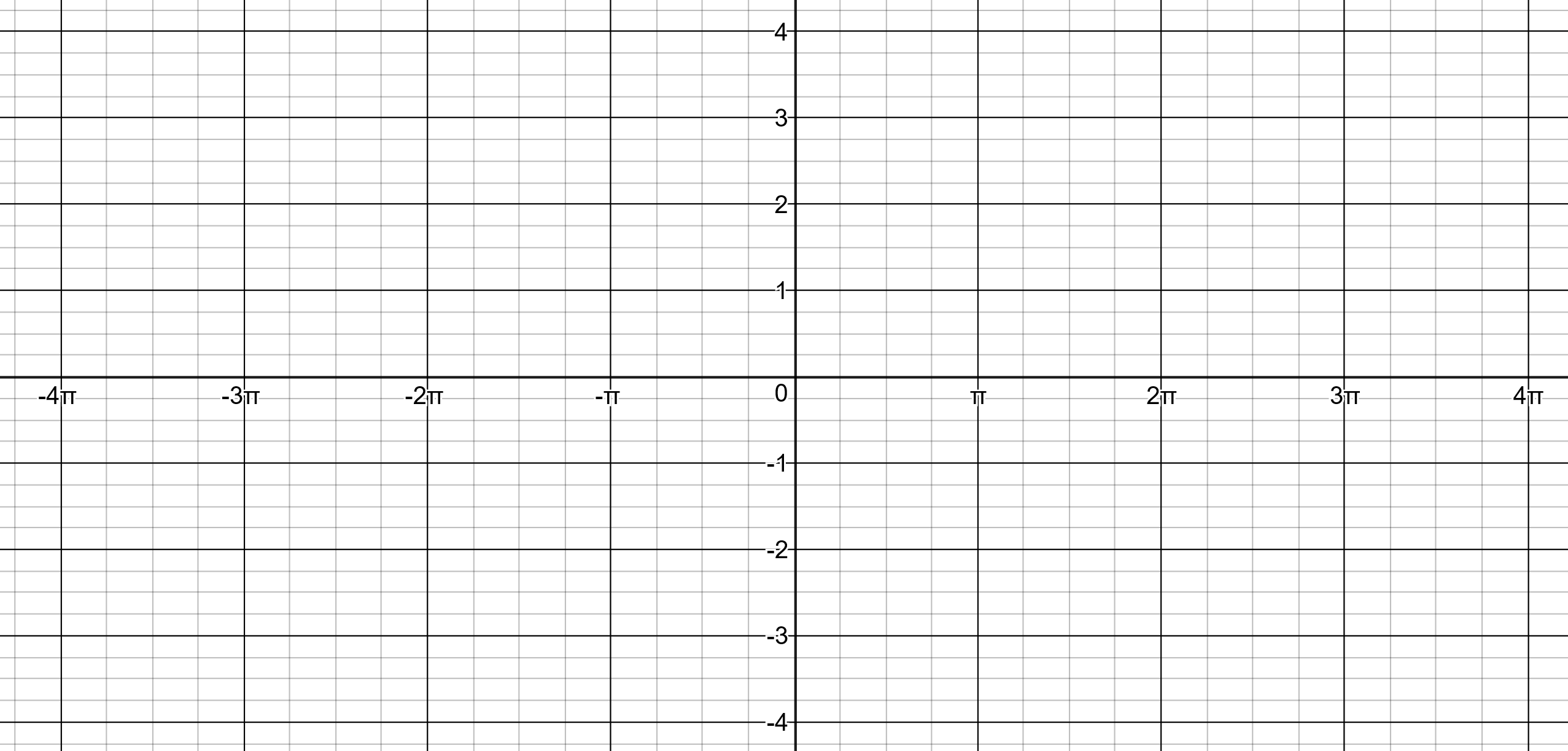
Range =

k =

a =

c =

b =



Question 2

Equation:

Amplitude =

Period =

Vertical shift =

Phase =

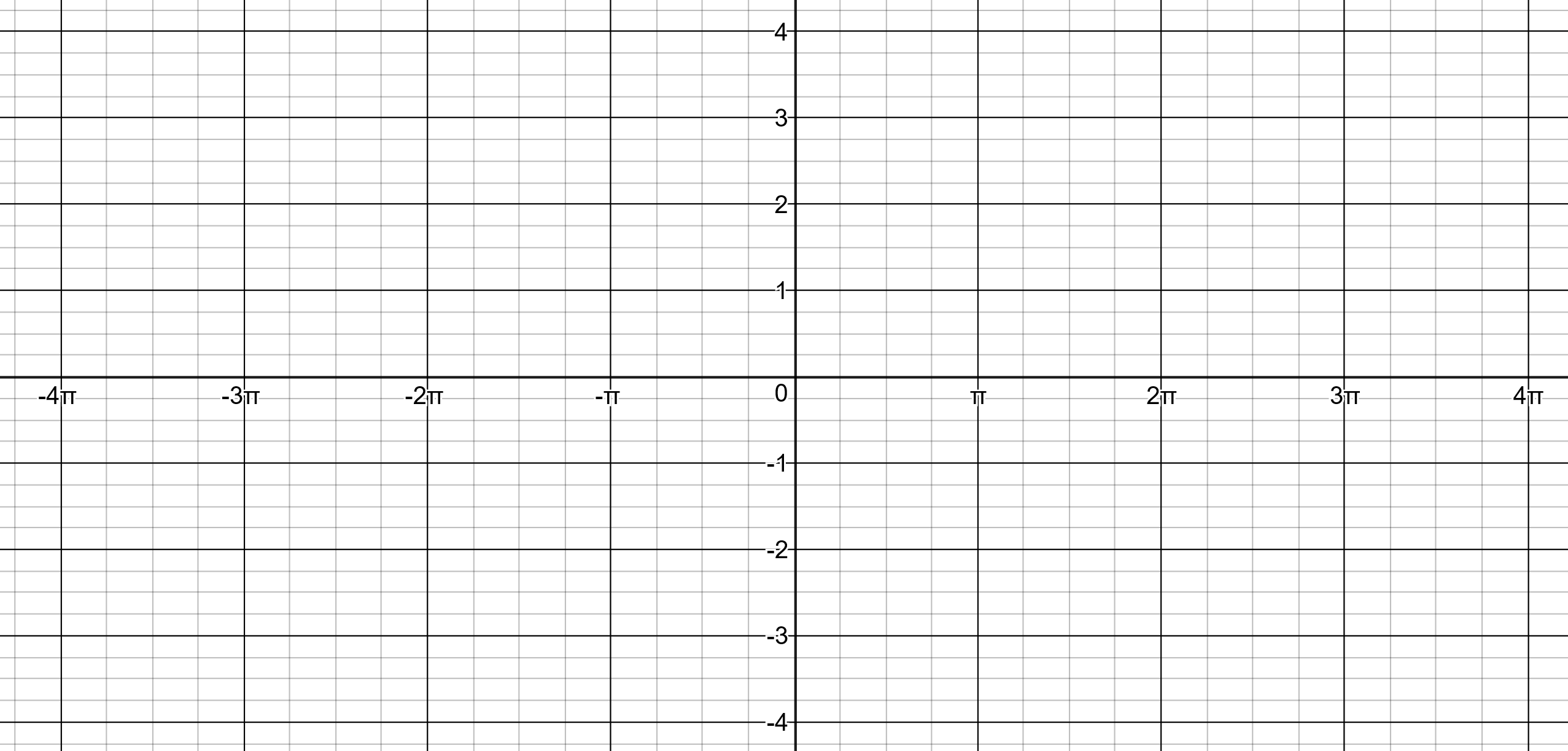
Range =

k =

a =

c =

b =



Activity 6 – composite transformations – paired activity

* A trigonometric equation is given to Student 1.
* Student 2 is given the graph / recording template found on the next page.
* Student 1 informs Student 2 which trigonometric function they are using. Sine, Cosine or Tangent.
* Student 1 describes all transformations within their equation. For example:
  + If the equation was sin 2x, they may state that the period is pi.
  + If the equation was sin 5x, they may state the amplitude is 5.
* Student 2 uses the information to complete the missing information, sketch the graph and states the equation.
* The students use graphing software to check the solution.
* The students swap roles.

Sample equation cards:

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
|  |  |  | y |
|  |  |  |  |

Student recording template

Amplitude =

Period =

Vertical shift =

Phase =

Range =

k =

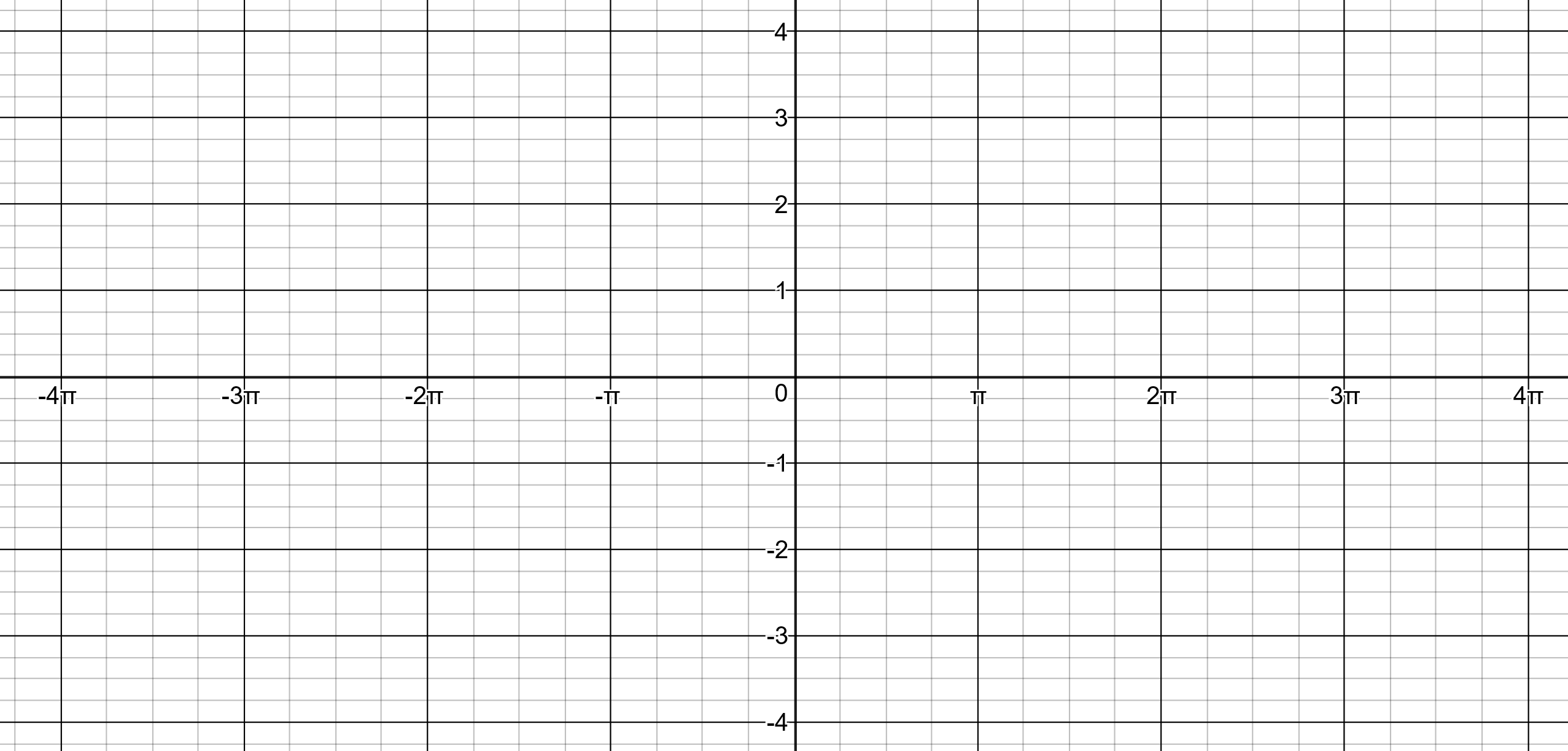
a =

c =

b =

Equation:

Graph:



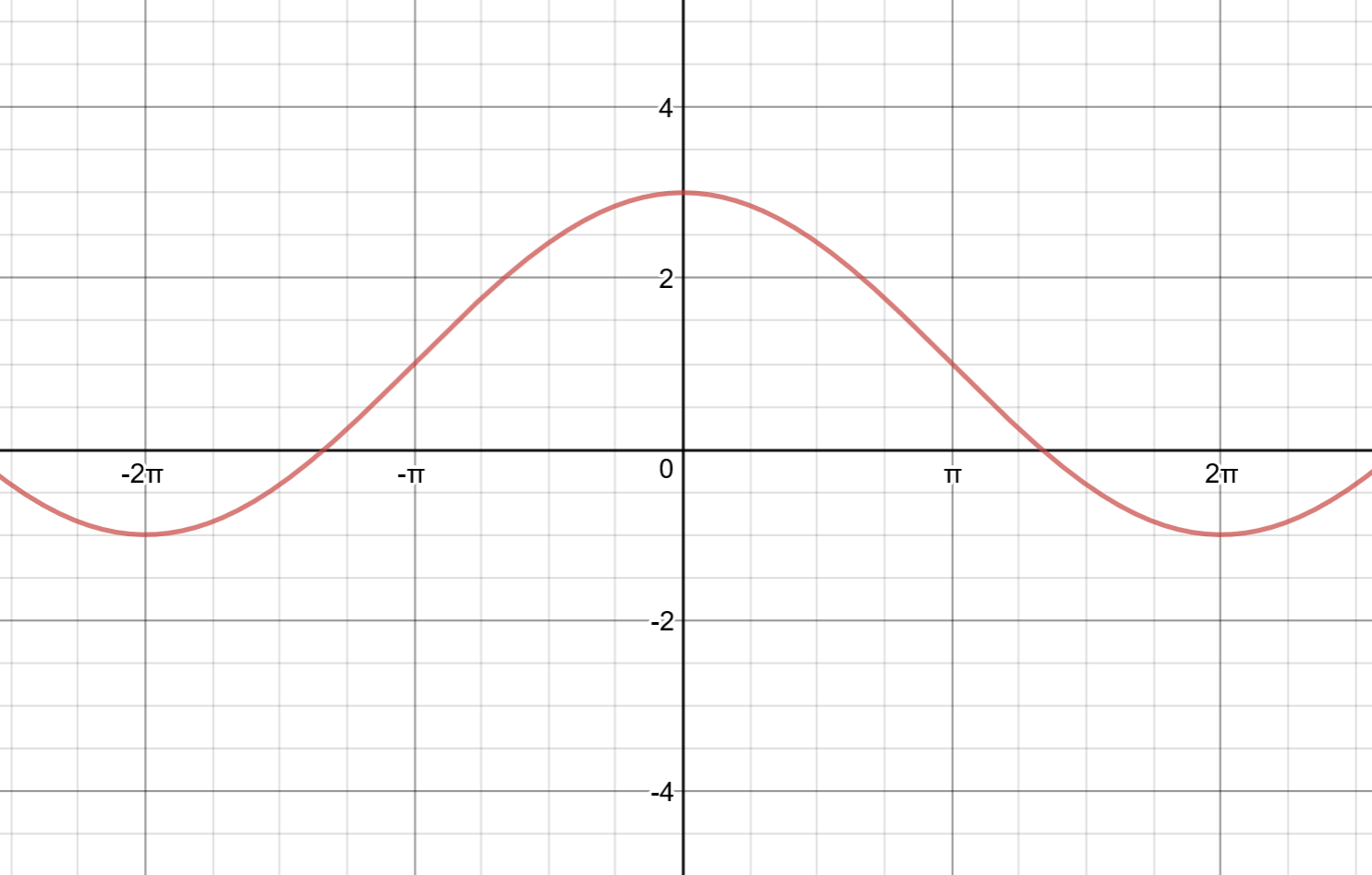
Activity 7 – graph to an equation

[Transformations of sine in desmos](https://www.desmos.com/calculator/2tvamrilx0)

[Transformations of cosine in desmos](https://www.desmos.com/calculator/pvxhrezwnb)

[Transformations of tangent in desmos](https://www.desmos.com/calculator/fgo045alwk)

Graph 1



Amplitude =

Period =

Vertical shift =

Phase =

Range =

k =

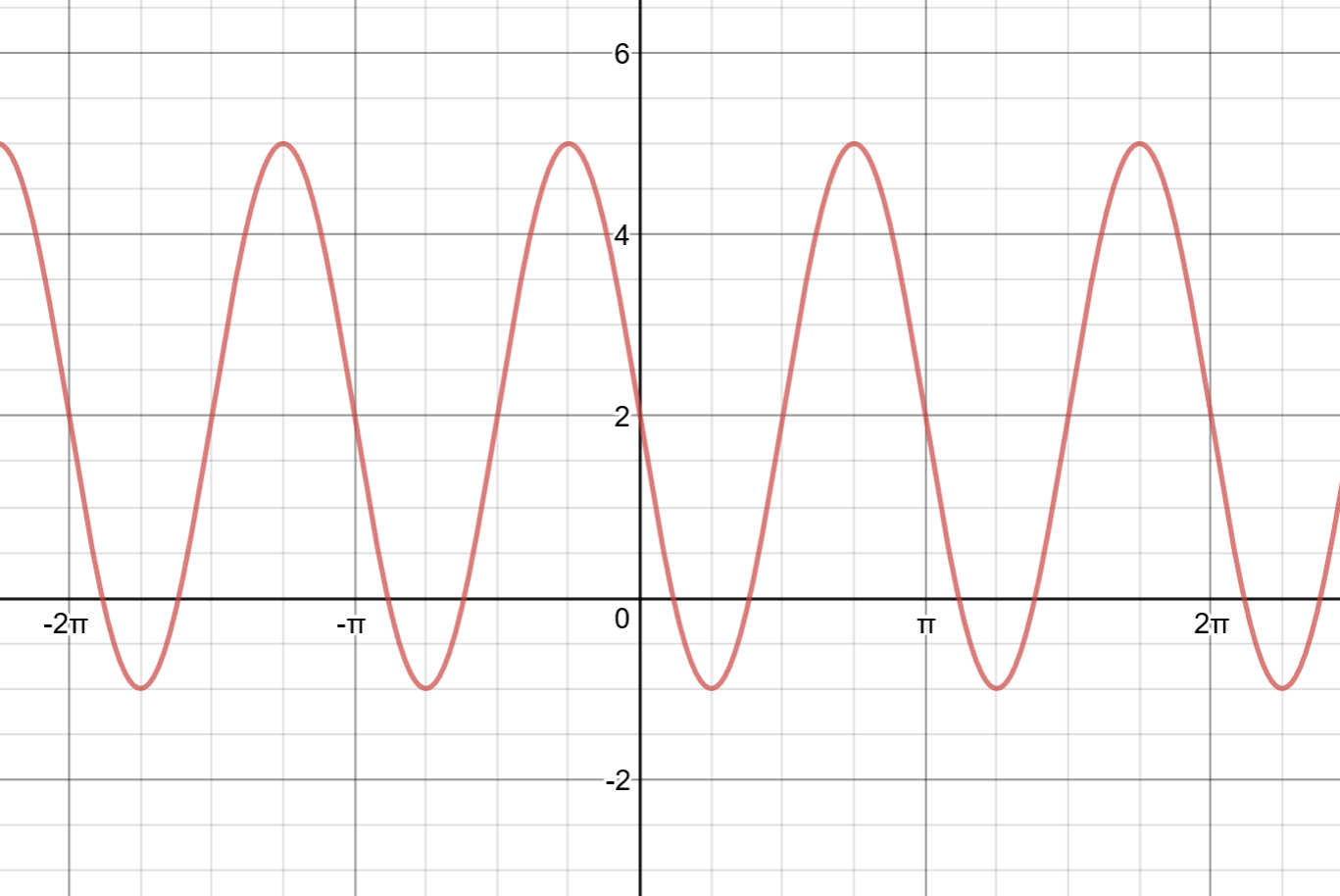
a =

c =

b =

Equation:

Graph 2



Amplitude =

Period =

Vertical shift =

Phase =

Range =

k =

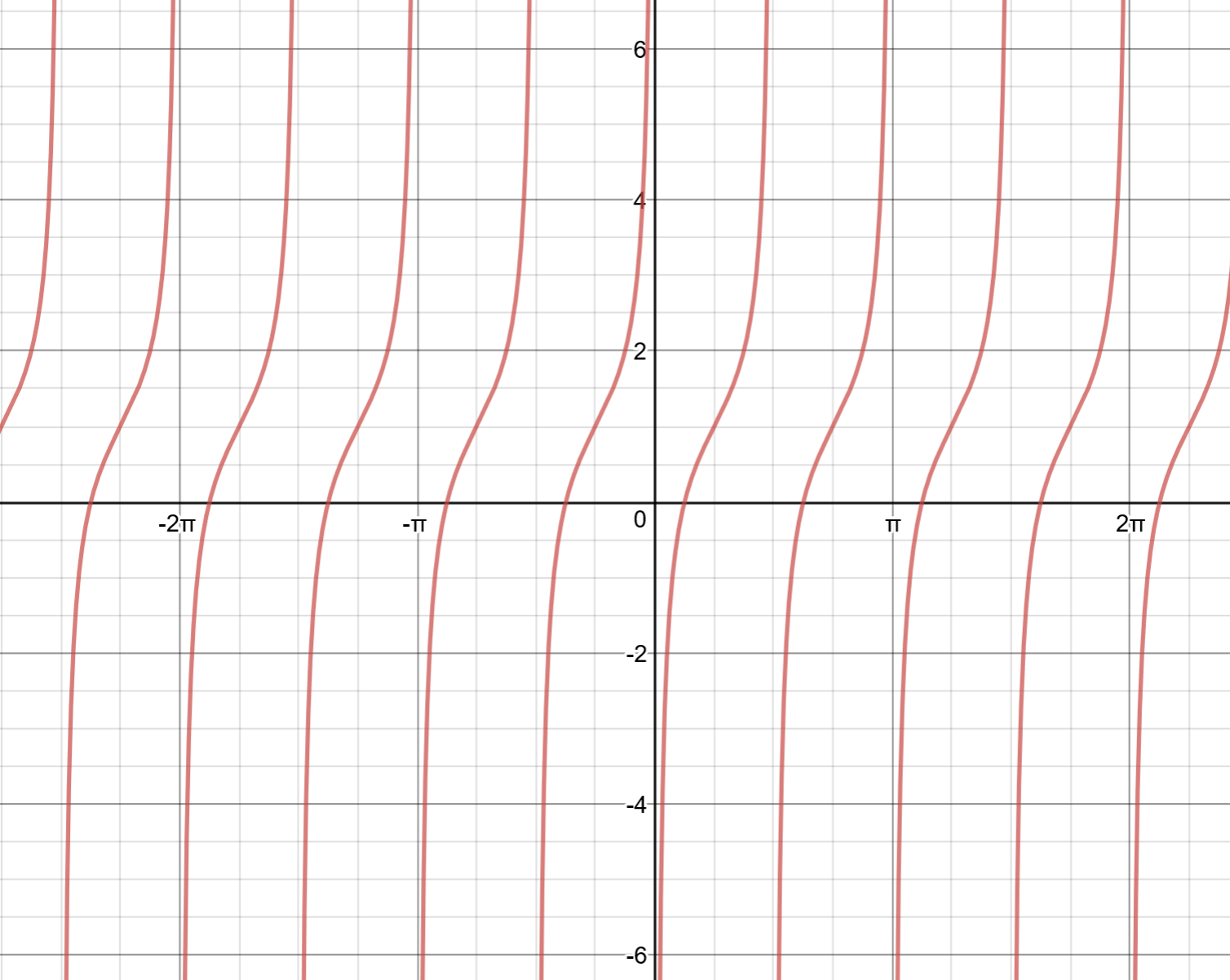
a =

c =

b =

Equation:

Graph 3



Amplitude =

Period =

Vertical shift =

Phase =

Range =

k =

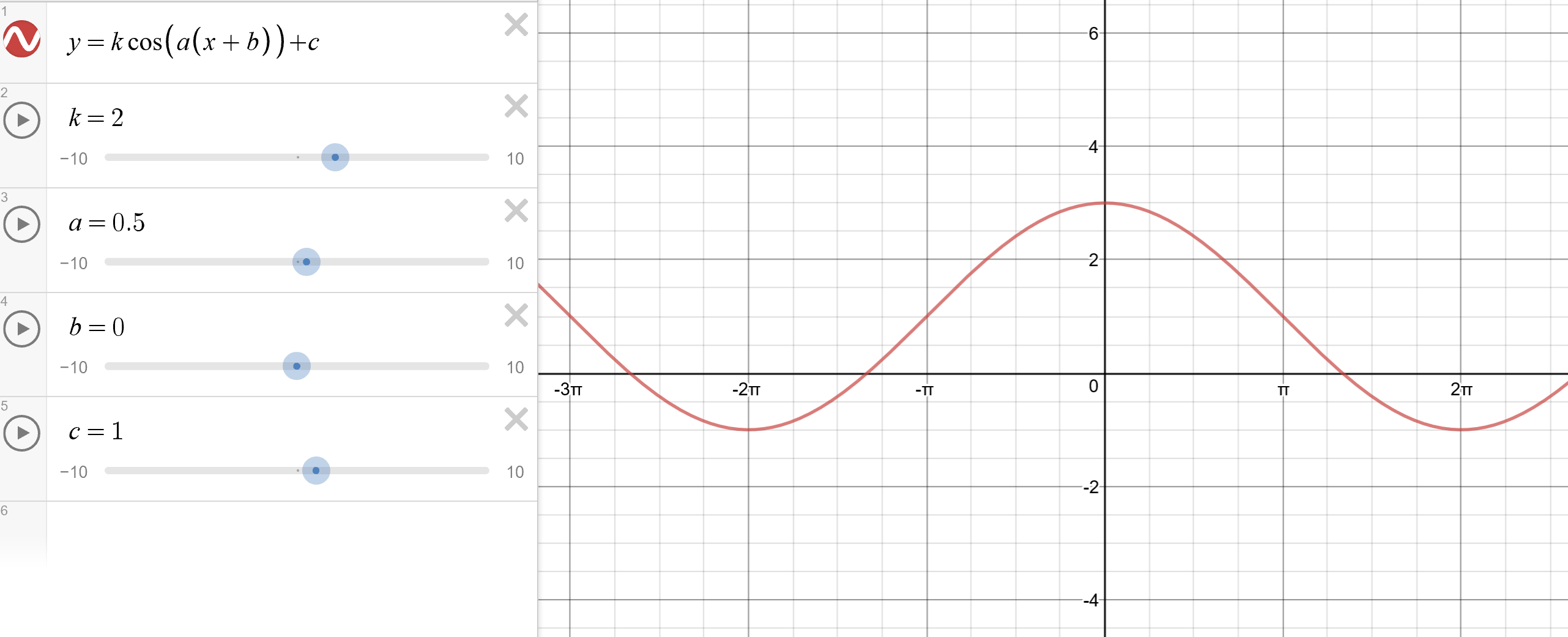
a =

c =

b =

Equation:

Graph 1



Graph 2



Graph 3

