**AZERBAIJAN STATE OIL INDUSTRY UNIVERSITY**

**CALCULUS INDEPENDENT WORK**

**STUDENT:GUNEL HUMBATOVA**

**GROUP:604.20E**

1. Find the distance between the two lines:  and .

*Solution:*

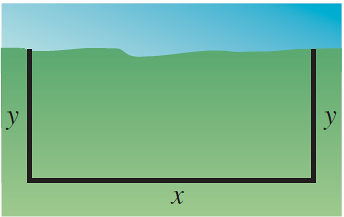
First we should find slopes.

🡪 The lines are parallel.

Distance between two parallel lines:

Answer:2.25

**2.** A rancher plans to fence a rectangular pasture adjacent to a river. The rancher has 100 meters of fencing, and no fencing is needed along the river (see figure).



Write the area  of the pasture as a function of , the length of the side parallel to the river. What is the domain of ?

*Solution:*

If one side of rectangle is x and other side is y, then circumference is c=2(x+y).

One side of rectangular pasture is next to river,and this side is x.Then whole length is:x+2y

Given length of fence is:100 meter

x+2y=100 🡪 y =

Area is:xy Then A=

A(x) = 🡪

Because area must be a positive value, we can conclude that A>0.

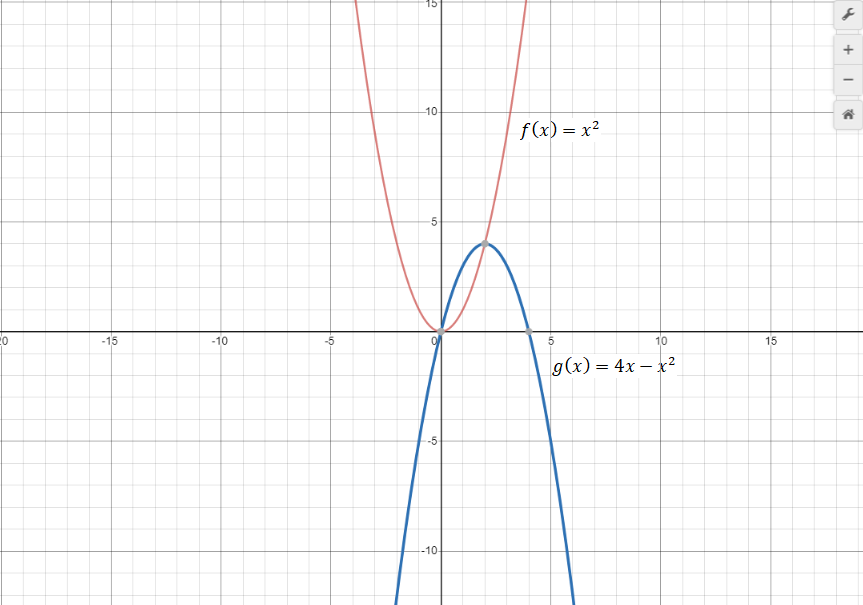
A>0 🡪

So, the domain of A is (0;100)

3.Graph the parabolas and find their points of intersection. Find an equation of the line through the points of their intersection:  and .

(0;0) (2;4)

Equation of the line through the points of their intersections:



**4**. Find the distance between the points  and  along the line .

*Solution:*

Points are on the same line:

The distance between the points is:

Answer:

**5**. Find an equation of the line that passes through the point  and has the slope  undefined.

*Solution*:

Formula of slope is:

Undefined slope means that slope = infinity or negative infinity or a vertical line.

A vertical line means that **x** coordinate never changes.

So,

There is no **y** intercept.The line never crosses the **y** axis.

**y** is any value.

Then the equation is: .

***6.Proof***

***Proof***

***7.Proof***

Let

***8.Proof***

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***9. Proof***

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***10. Proof***

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11.Proof

12. Proof

Subtract and add:

13.Proof