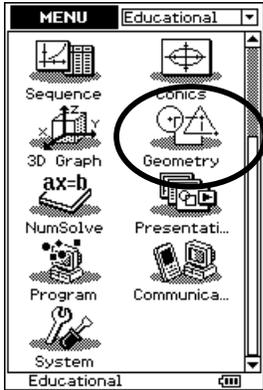


Geometrical construction on the ClassPad 300+.

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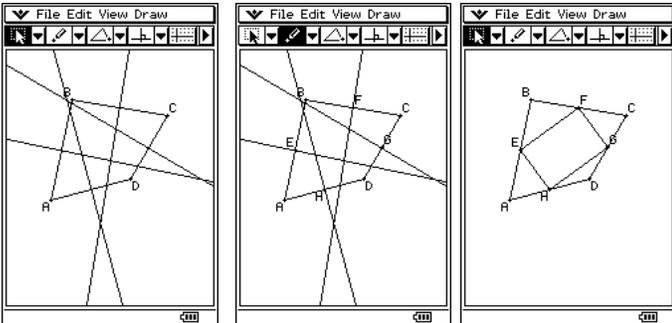
From the Main Menu...enter the Geometry icon



Task 1:

Construct any 4 sided figure using

1. Points and connecting them up with line segments A, B, C and D
or
2. Making 4 connected line segments to form a quadrilateral A, B, C and D
3. Construct the midpoints, E, F, G and H
4. Hide the perpendicular construction lines
5. Connect E, F, G and H with line segments



What are the properties of the quadrilateral EFGH?
Is this true for all quadrilaterals constructed in this way?
Investigate.

How can this be proved with any 4 general points:
(a, b) (c, d) (e, f) (g, h) that form a quadrilateral?

By fixing the points E, F, G and H to the respective sides of the quadrilateral you can the 'tap and drag' either of the points A, B, C or D to form 'new' and seeing what happens to the quadrilateral EFGH.

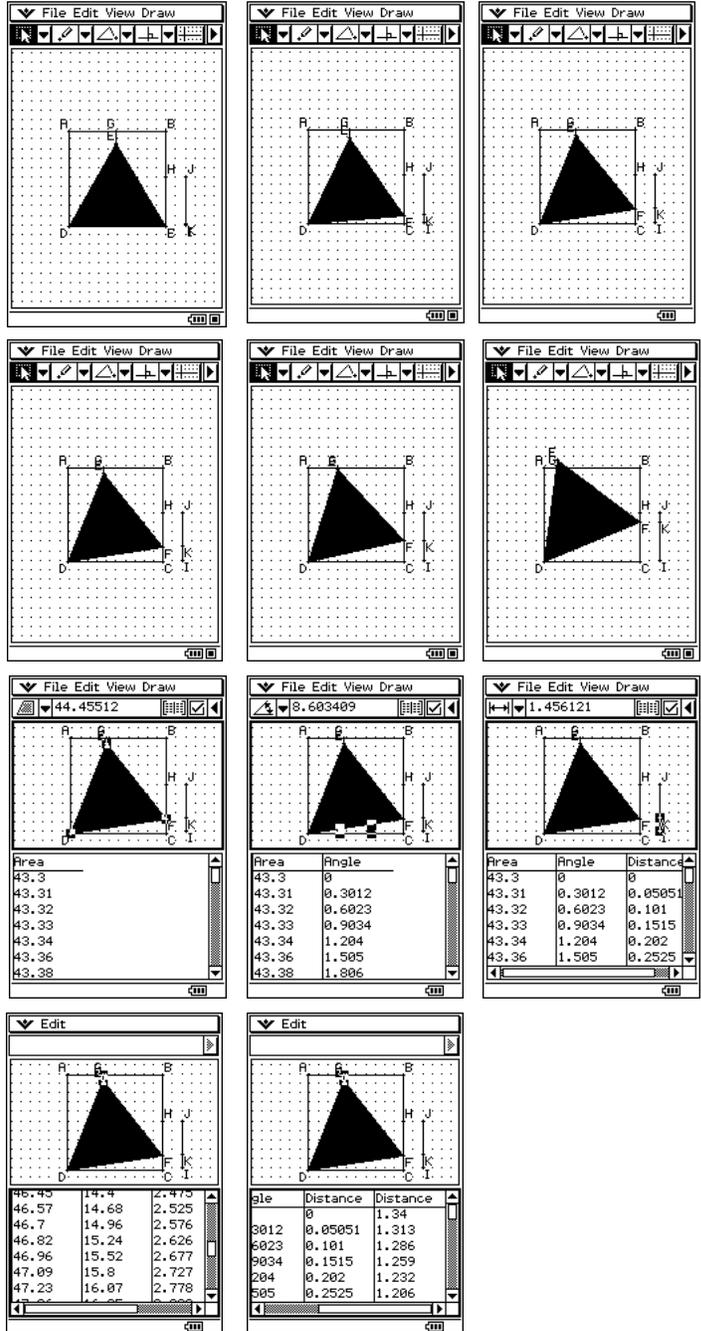
Task 2:

What is the largest sized equilateral triangle that can fit in a square?

Construct a square ABCD and then construct the equilateral triangle DEF.

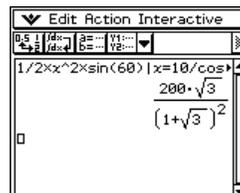
Animate the point F along the side CB.

[Note: It is important that the line segment CB is constructed CB and not BC.]



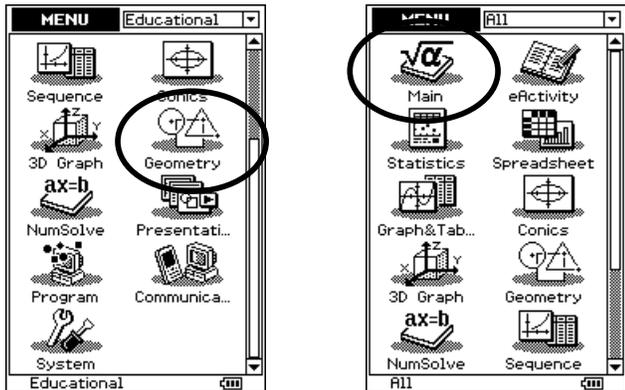
Maximum area occurs at approximately 46.7, with a base angle of approximately 14.97°.

On thinking about it the triangle should be such that the $\angle CDF = \angle ADE = 15^\circ$, as $\angle FDE = 60^\circ$ by construction. In the table of values, if the angle is $> 15^\circ$ then the triangle is NOT fitted inside the square any longer.



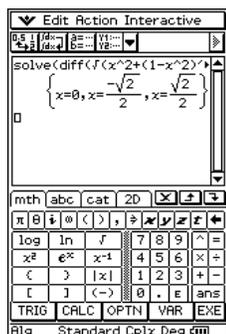
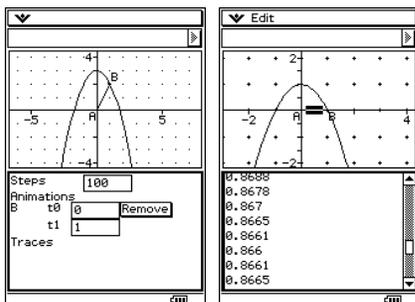
Task 3:

From the Main Menu...enter the Geometry and Main icons.

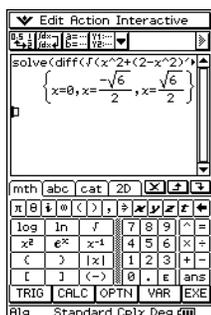
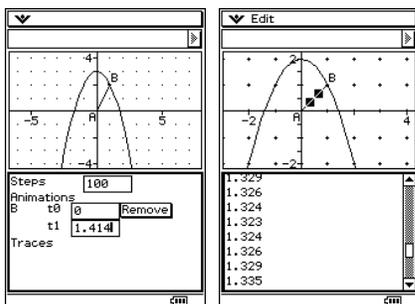


What is the minimum distance of a point on the curve to the origin?

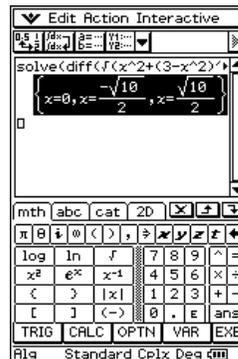
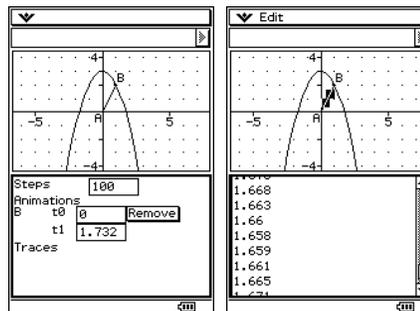
(a) $y=1-x^2$, $x=0.866$



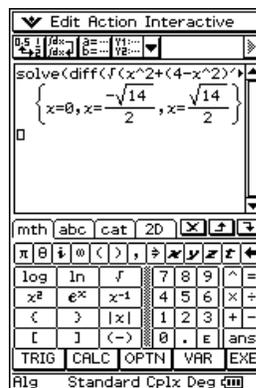
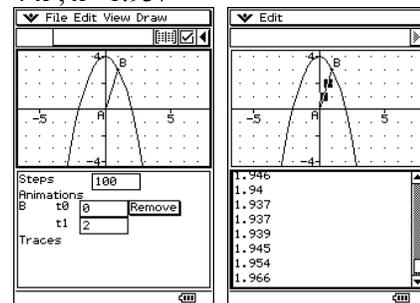
(b) $y=2-x^2$, $x=1.323$



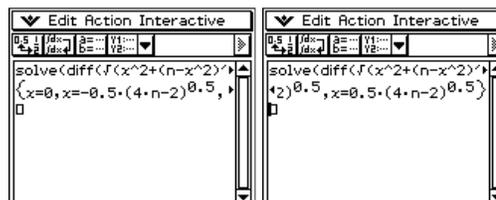
(c) $y=3-x^2$, $x=1.658$



(d) $y=4-x^2$, $x=1.937$



(e) $y=n-x^2$, $x=?$



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