

Computing and display with the new CASIO-ClassPad330

Tasks and content of the video clips:

see Internet:

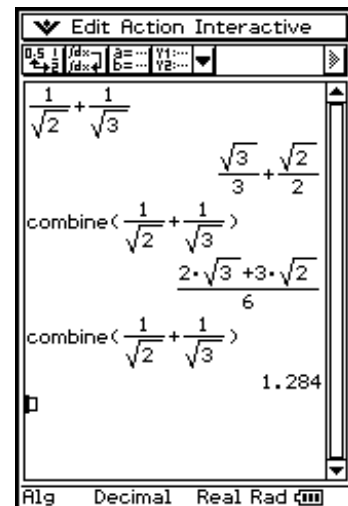
1. http://www2.htw-dresden.de/~paditz/images/CP_Main.avi (Numerical computing)
2. <http://www2.htw-dresden.de/~paditz/images/Sonderzeichen.avi> (Num./symbolic computing)
3. <http://www2.htw-dresden.de/~paditz/images/CAS4.avi> (Symbolic computing)
4. http://www2.htw-dresden.de/~paditz/images/Graph_Tabelle5.avi (2D/3D-Graphics)
5. <http://www2.htw-dresden.de/~paditz/images/geometrie6.avi> (Dynamic Geometry)
6. <http://www2.htw-dresden.de/~paditz/images/eActivity.avi> (e-Activity)

1. Numerical computation in the main application menu:

Entering via the virtual 2D-keyboard:

$$\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3} + \frac{\sqrt{2}}{2}$$

$$\text{combine}\left(\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{3}}\right) = \frac{2 \times \sqrt{3} + 3 \times \sqrt{2}}{6} = 1.284$$



2. Numerical and symbolic computing in the main application menu:

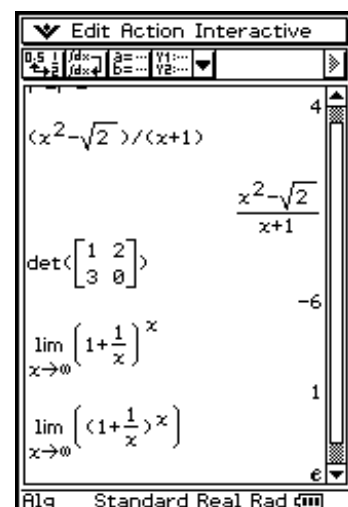
Entering via the virtual 2D-keyboard:

$$|-2| + 2 = 4$$

$$\frac{x^2 - \sqrt{2}}{x+1} = \frac{x^2 - \sqrt{2}}{x+1}$$

$$\det\left(\begin{bmatrix} 1 & 2 \\ 3 & 0 \end{bmatrix}\right) = -6$$

$$\lim_{n \rightarrow \infty} \left(1 + \frac{1}{x}\right)^x = e$$



3. Symbolic computing in the main application menu:

Entering via the virtual 2D-keyboard:

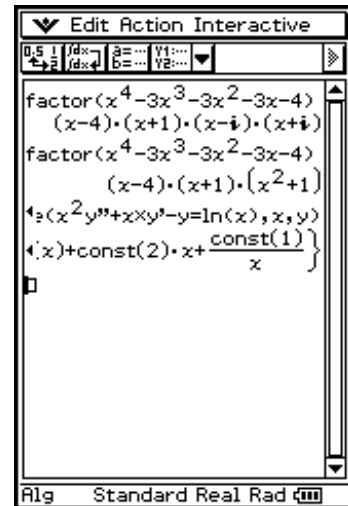
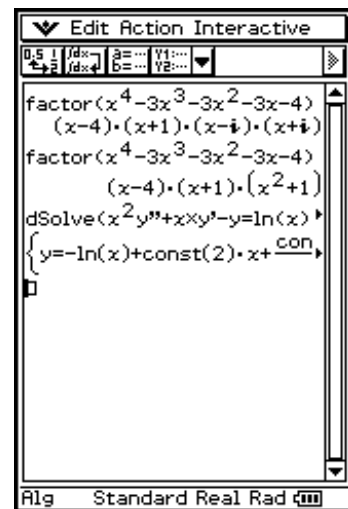
$$\text{factor}(x^4 - 3x^3 - 3x^2 - 3x - 4) = (x - 4)(x + 1)(x - i)(x + i)$$

$$\text{factor}(x^4 - 3x^3 - 3x^2 - 3x - 4) = (x - 4)(x + 1)(x^2 + 1)$$

$$\text{dSolve}(x^2y'' + xy' - y = \ln(x), x, y) =$$

$$\left\{ y = -\ln(x) + \text{const}(2) \times x + \frac{\text{const}(1)}{x} \right\}$$

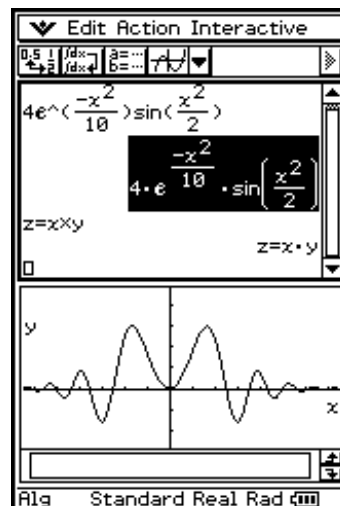
Euler differential equation of 2nd order, inhomogeneous.



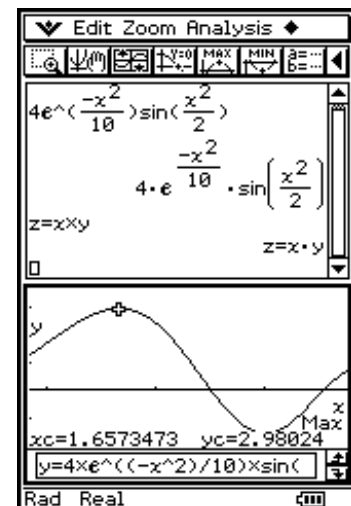
4. Formula terms in the main application menu „pull“ in a graphics window:

Entering the formula terms and with Drag & Drop display in the 2D- or 3D-graphics window:

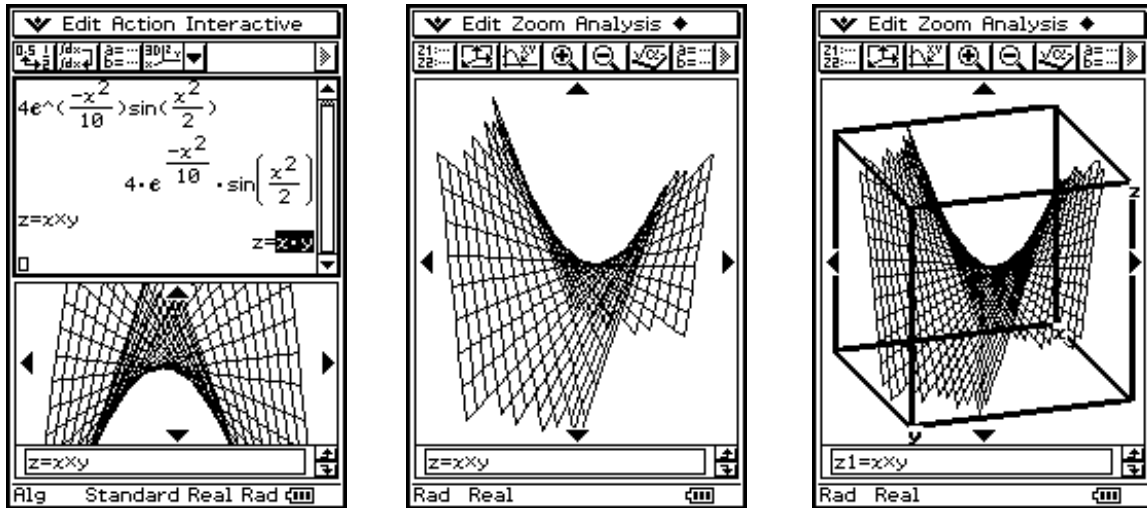
Input $4 \times \exp\left(\frac{-x^2}{10}\right) \times \sin\left(\frac{x^2}{2}\right)$,



Input $z = x \times y$.

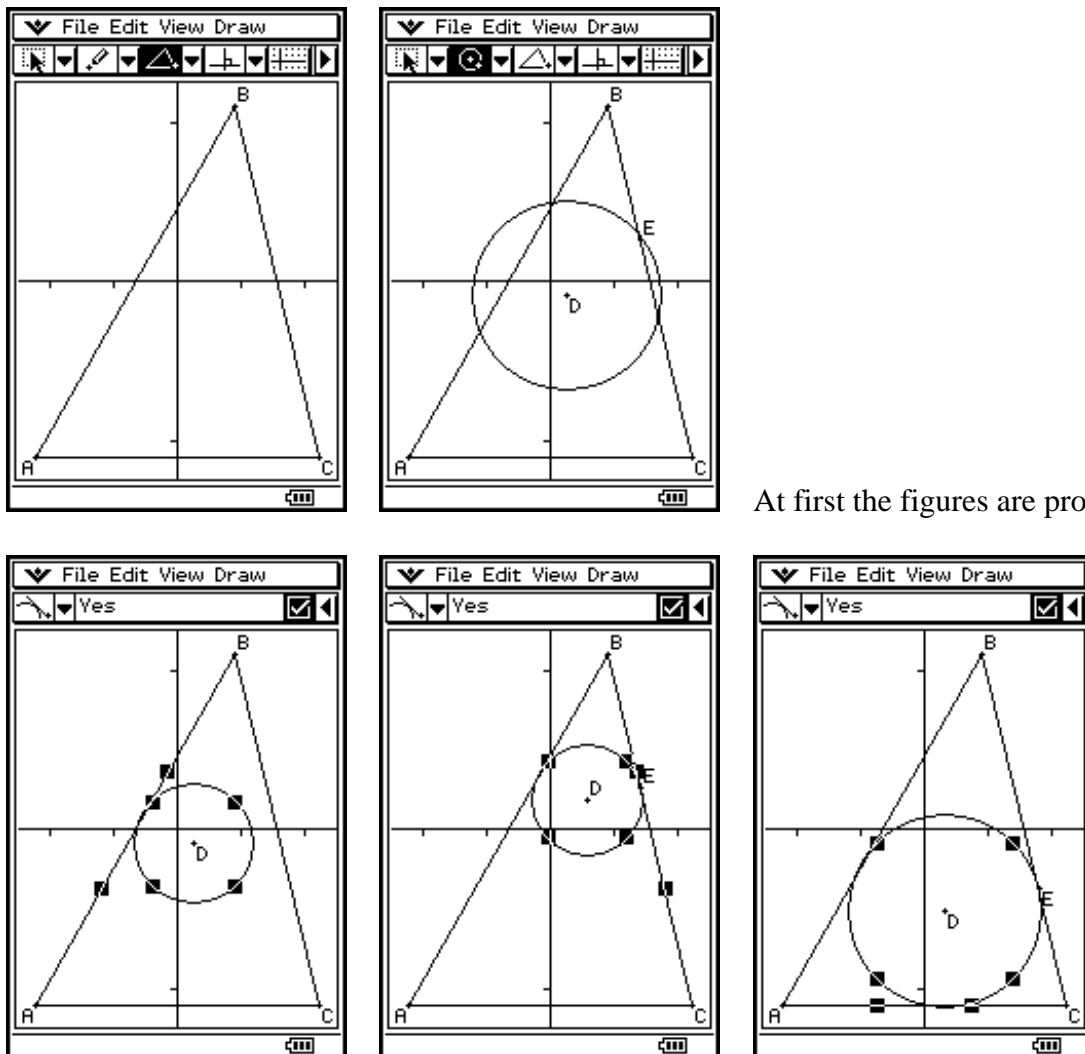


3D-Graphics:



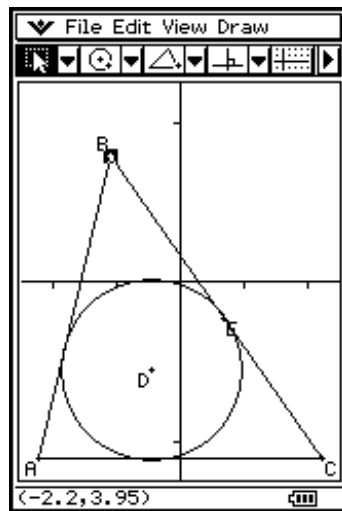
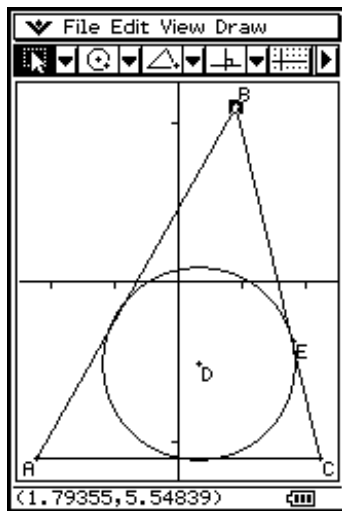
5. Dynamic Geometry:

Draw a triangle with inscribed circle and then drawing dynamically changing:



At first the figures are provided,

then the figures are gradually adjusted step by step.



Drag & Drop in point B

6. e-activity:

According the formula the rhombus will be constructed:

Rhombus:
Exploring the equation of a rhombus graphically.

Rhombus

General form of a rhombus:

$$d|x-h|+e|y-k|=f$$

Example 1:
Graph $2|x-5|+5|y-2|=20$

Hint:
Solve for y two ways,
a. For $(y-2)>0$

Hint:
Solve for y two ways,
a. For $(y-2)>0$
b. For $(y-2)<0$
and then graph the equations.

$$\text{solve}(2|x-5|+5|y-2|=20, y)$$

$$\left\{ y = \frac{2 \cdot |x-5|}{5} - 2, y = \frac{-2 \cdot |x-5|}{5} \right\}$$

The Graph

Use the Geometry strip above to graph:

$$\left\{ y = \frac{2 \cdot |x-5|}{5} - 2, y = \frac{-2 \cdot |x-5|}{5} \right\}$$

The Graph

Use the Geometry strip above to graph:

$$4|x+3|+3|y+5|=12$$

$$\text{solve}(4|x+3|+3|y+5|=12, y)$$

$$\left\{ y = \frac{4 \cdot |x+3|}{3} - 9, y = \frac{-4 \cdot |x+3|}{3} \right\}$$

Solution

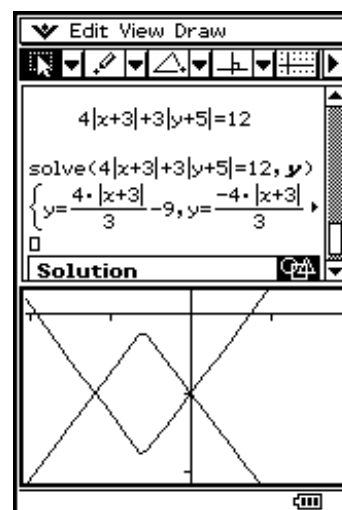
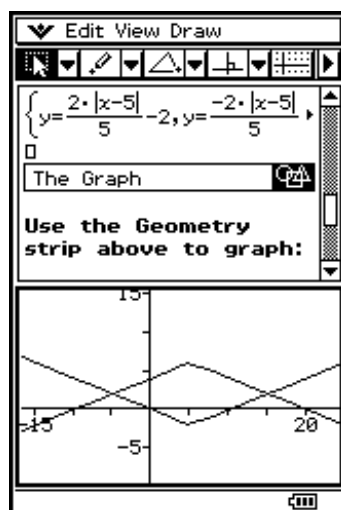
The written text in the e-activity and the geometric strips.

Rhombus

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The open graphics windows inside the e-activity.