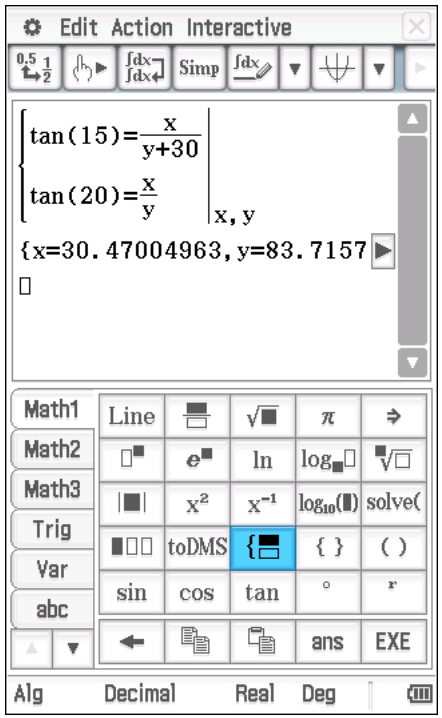
ClassPad II - Sample questions	Downloads	https://charliewatson.com/atar/
	Author	Charlie Watson

Main

Moving 30 m from A to B towards base of vertical mast, the angle of elevation of the top of mast increases from 15° to 20°. How far from the base is B and how tall is the mast?

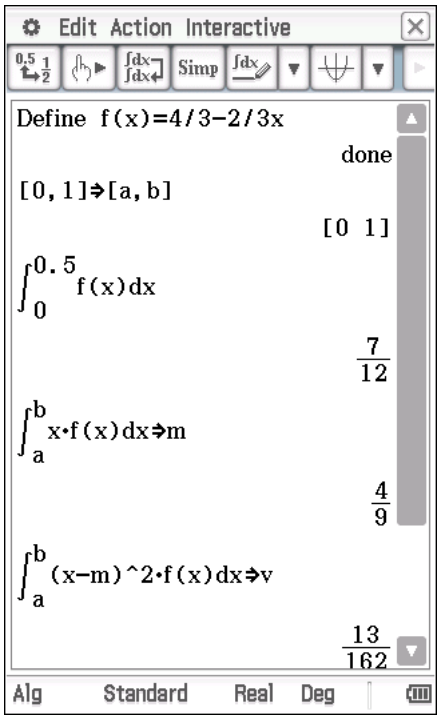


eActivity

A continuous random variable is defined by:

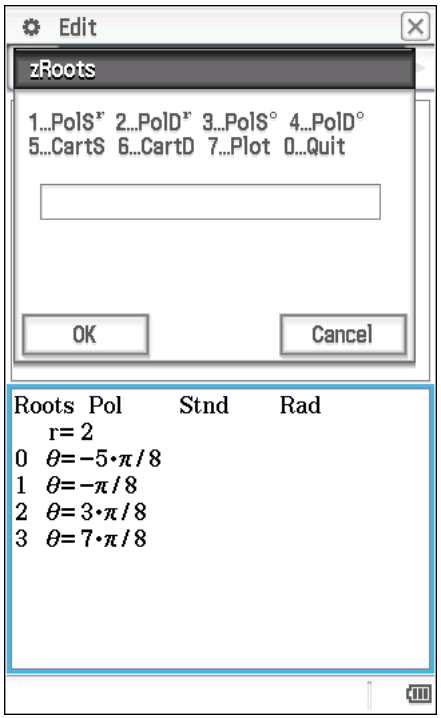
$$f(x) = \frac{4}{3} - \frac{2}{3}x, 0 < x < 1$$

Determine $P(X < 0.5)$, $\mathrm{E}(X)$ and $\mathrm{Var}(X)$.



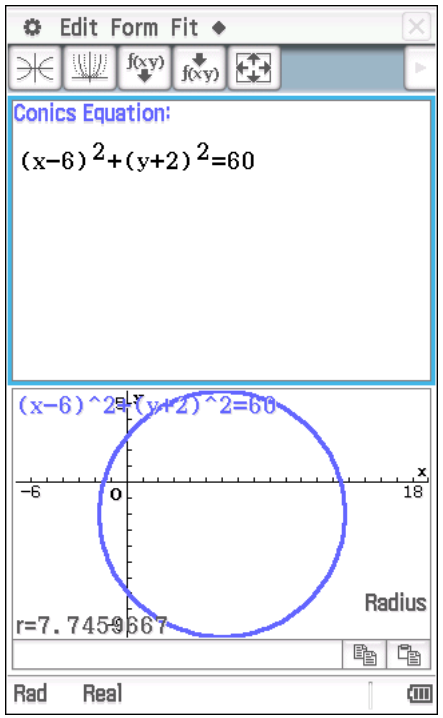
Program

Determine the four roots of $z^4 = -16i$



Conics

Determine the exact radius of the circle $x^2 + y^2 = 12x - 4y + 20$.



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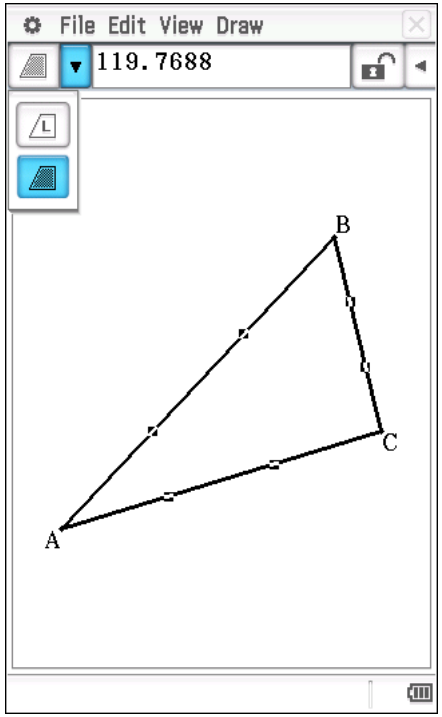
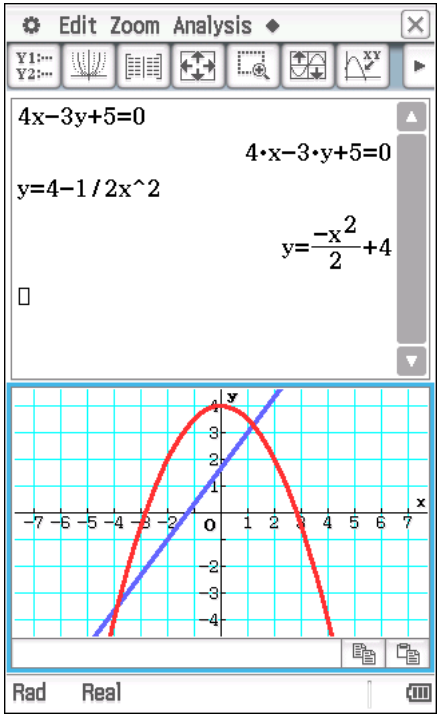
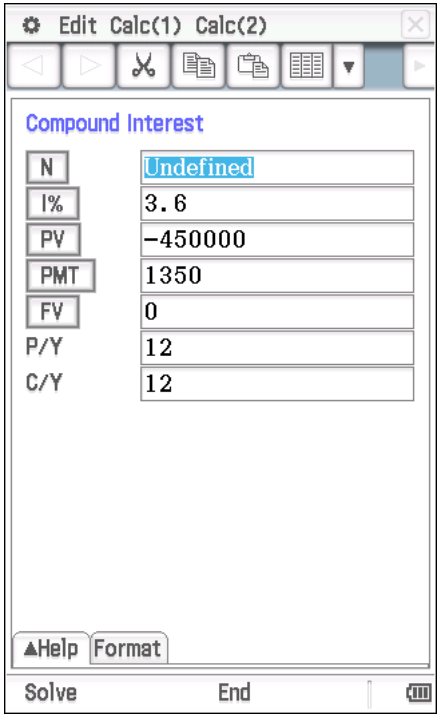
Geometry
Triangle ABC has $A = 30°, b = 20$ cm and $a = 15$ cm. Determine the smallest perimeter and largest area of ABC.



Main
Sketch on the same axes the graphs of $4x - 3y + 5 = 0$ and $y = 5 - \frac{1}{2}x^2$.



Financial
Discuss the effect of reducing the monthly annuity drawn from an initial sum of $450 000 invested at 3.6% pa compounded monthly from $1 650 to (i) $1 350, (ii) $1 250.



Main
A popcorn container has the shape of an inverted, open cone and must have a volume of 500 cm^3. Determine the radius required to minimise the surface area of the container.