

ClassPad II - Sample questions

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

Program

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

Conics

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

ClassPad II Edit Action Interactive window showing the solution to the trigonometry problem. The equations are: $\tan(15^\circ) = \frac{x}{y+30}$ and $\tan(20^\circ) = \frac{x}{y}$. The solution found is $x = 30.47004963$ and $y = 83.7157$.

ClassPad II Edit Action Interactive window showing the definition of the function $f(x) = 4/3 - 2/3x$ and its integration. The integral from 0 to 0.5 is $7/12$. The integral from a to b of $x \cdot f(x) dx$ is $4/9$. The integral from a to b of $(x-m)^2 \cdot f(x) dx$ is $13/162$.

ClassPad II Edit window showing the roots of the equation $z^4 = -16i$. The roots are: $r = 2$, $\theta = -5\pi/8$, $\theta = -\pi/8$, $\theta = 3\pi/8$, and $\theta = 7\pi/8$.

ClassPad II Edit Form Fit window showing the equation of a circle $(x-6)^2 + (y+2)^2 = 60$ and its radius $r = 7.7459667$.

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Geometry

Triangle ABC has $A = 30^\circ$, $b = 20$ 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.

