Advant-Garde

Math Edition 2005

Thank you for using Advant-Garde 2005!
This program is the future to new programs developed by `Calcsoft Technologies.` Let us take some time to talk about the creation of this program and what is means for the future of calculator programming.

Many individuals have asked me, "Why use a program to give you the answers, when all you have to do is look it up in a book?"
Well, that is actually quite a good question. Math programs are convenient and that really is about as far as they go. The question still stands. I really appreciated that statement and I answered it through this program. Advant-Garde does solve many formula-based problems so there is nothing original to it. However, it is created with the formulas not listed. This saves useful calculator space. Also, many teachers do not allow students to have a "cheat sheet" with them during a test, so this eliminates the need of having to memorize several formulas. Also, it is understood that if someone wants a formula so badly then just include all the formulas in the documentation. That is what we have done.

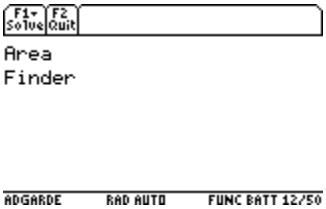
What is New?
Of course the main question people ask is "What is new?" Well this program is quite different from any other program in the fact that it combines several programs into one. This is essential to any math student. Also, this program leaves room for improvement. By this, I mean that Advant-Garde will be updated every year with new features and programs. Lastly, Advant-Garde has a new answer box. This box displays the answer that is solved in the other programs. It is fast and it saves space.

How to Use
Advant-Garde is a fairly simple program but to make it even easier I have include instructions on how to use it.

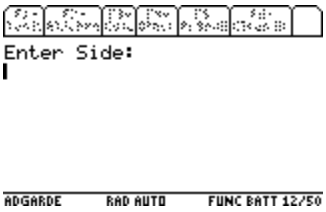
- The Home Page is where all the features are at.

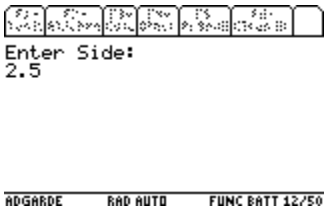
- You may exit the program anytime on the main screen by pressing the "ESC" or by going to the menu and selecting "Quit."

- When you select a program, you will be taken to the program's main page

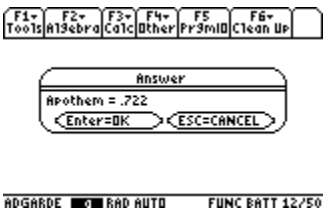


- The menu options are the same as those on the main page.
- When you make a selection, you will be taken to the input screen





- Once you entered all the values you will be taken to the answer box



- Press "Enter" and you are back to the main page.

Formulas (For those who want to know)

Area

1. Apothem

$$\frac{\sqrt{3}}{6} \cdot s = A$$

$s = Side$

2. Circle

$$\pi \cdot r^2 = A$$

$r = Radius$

3. Parallelogram & Rectangle

$b \cdot h = A$

$b = Base$

$h = Height$

4. Polygon

$\frac{1}{2} \cdot \alpha \cdot p = A$

$\alpha = Apothem$

$p = Perimeter$

5. Rhombus

$b \cdot h = A$

$b = Base$

$h = Height$

$\frac{1}{2} \cdot d1 \cdot d2 = A$

$d1 = Diagonal\,1$

$d2 = Diagonal\,2$

6. Sector

$\frac{\pi \cdot r \cdot \theta}{360} = A$

$r = Radius$

$\theta = Arc\,\circ$

7. Segment

$Sa - Ta = A$

$Sa = Sector\ Area$

$Ta = Triangle\ Area$

8. Square

$s^2 = A$

$s = Side$

9. Trapezoid

$$\frac{1}{2} \cdot h \cdot (b1 - b2) = A$$

$h = Height$

$b1 = Base1$

$b2 = Base2$

10. Triangle

Equilateral

$$s^2 \cdot \sqrt{\frac{3}{4}} = A$$

$s = Side$

Heron's Formula

$$\sqrt{\left(\frac{s1+s2+s3}{2}\right) \cdot \left(\frac{s1+s2+s3}{2} - s1\right) \cdot \left(\frac{s1+s2+s3}{2} - s2\right) \cdot \left(\frac{s1+s2+s3}{2} - s3\right)} = A$$

$s1 = Side1$

$s2 = Side2$

$s3 = Side3$

Regular

$$\frac{1}{2} \cdot b \cdot h = A$$

$b = Base$

$h = Height$

Quadratic Equation

$$\frac{^{-}b \pm \sqrt{b^2 - 4 \cdot a \cdot c}}{2 \cdot a} = QE$$

Pythagorean Theorem

$$a^2 + b^2 = c^2$$

Slope

Slope Intercept Form

$m \cdot x + b$

$m = Slope$

$b = Y - Intercept$

Finding Slope

$$\frac{y2 - y1}{x2 - x1} = S$$

Surface Area

1. Cone

   $\pi \cdot r^2 = Ba$

   $\pi \cdot r \cdot \gamma = La$

   $Ba + La = Sa$

   $r = Radius$

   $\gamma = Slant\ Height$

2. Cube

   $6 \cdot s^2 = Sa$

   $s = Side$

3. Cylinder

   $\pi \cdot r^2 = Ba$

   $2 \cdot \pi \cdot r \cdot \gamma = La$

   $2 \cdot Ba + La = Sa$

   $r = Radius$

   $\gamma = Slant\ Height$

4. Polyhedron

   $a \cdot f = Sa$

   $a = Area$

   $f = \#\ of\ Faces$

5. Polygonal Prism

$$\frac{1}{2} \cdot \alpha \cdot p = Ba$$

$$p \cdot \gamma = La$$

$$2 \cdot Ba + La = Sa$$

$\alpha = Apothem$

$p = Perimeter$

$\gamma = Slant\ Height$

6. Polygonal Pyramid

$$\frac{1}{2} \cdot \alpha \cdot p = Ba$$

$$\frac{1}{2} \cdot p \cdot \gamma = La$$

$$Ba + La = Sa$$

$\alpha = Apothem$

$p = Perimeter$

$\gamma = Slant\ Height$

7. Sphere

$$4 \cdot \pi \cdot r^2 = Sa$$

$r = Radius$

8. Triangular Prism

$$\frac{1}{2} \cdot b \cdot h = Ba$$

$$p \cdot \gamma = La$$

$$2 \cdot Ba + La = Sa$$

$b = Base$

$h = Height$

$p = Perimeter$

$\gamma = Slant\ Height$

9. Triangular Pyramid

$$\frac{1}{2} \cdot b \cdot h = Ba$$

$$\frac{1}{2} \cdot p \cdot \gamma = La$$

$$Ba + La = Sa$$

$b = Base$

$h = Height$

$p = Perimeter$

$\gamma = Slant\ Height$

Volume

1. Cone

$$\frac{1}{3} \cdot \pi \cdot r^2 \cdot h = V$$

$r = Radius$

$h = Height$

2. Cube

$$e^3 = V$$

$e = Edge\ Length$

$$l \cdot w \cdot h = V$$

$l = Length$

$w = Width$

$h = Height$

3. Cylinder

$$\pi \cdot r^2 \cdot h = V$$

$r = Radius$

$h = Height$

4. Dodecahedron

$$\frac{e^3 \cdot \left(7 \cdot \sqrt{5} + 15\right)}{4} = V$$

$e = Edge\ Length$

5. Icosahedron

$$\frac{5 \cdot e^3 \cdot \left(\sqrt{5}+3\right)}{12} = V$$

$e = Edge\,Length$

6. Octahedron

$$\frac{\sqrt{2}}{3} \cdot e^3 = V$$

$e = Edge\,Length$

7. Prism

$$b \cdot h = V$$

$b = Base$

$h = Height$

8. Pyramid

$$\frac{1}{3} \cdot b \cdot h = V$$

$b = Base$

$h = Height$

9. Sphere

$$\frac{4}{3} \cdot \pi \cdot r^3 = V$$

$r = Radius$

10. Tetrahedron

$$\frac{\sqrt{2}}{12} \cdot e^3 = V$$

$e = Edge\,Length$