

A fine line between theory and application and what to do about it

Technical Maths

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Complex Numbers

- Press MODE 3

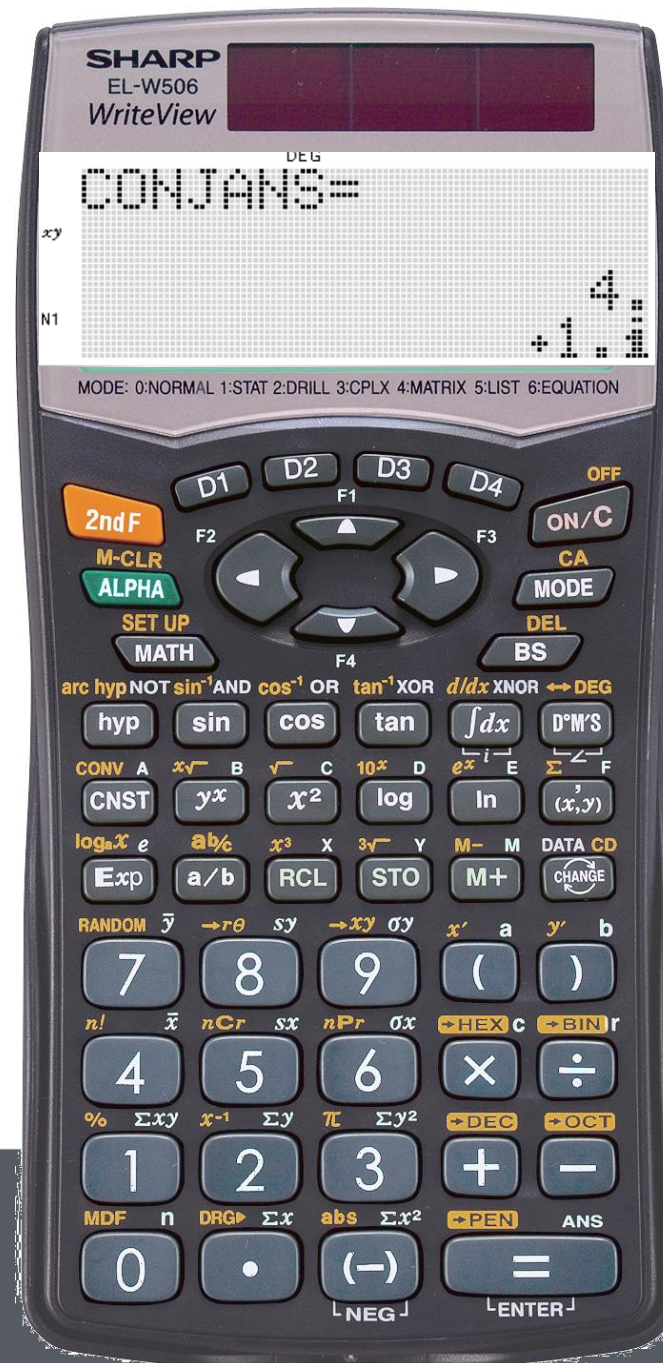
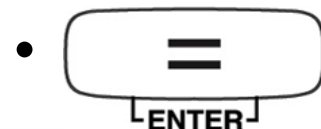
- 4 –




- To find Conjugate form

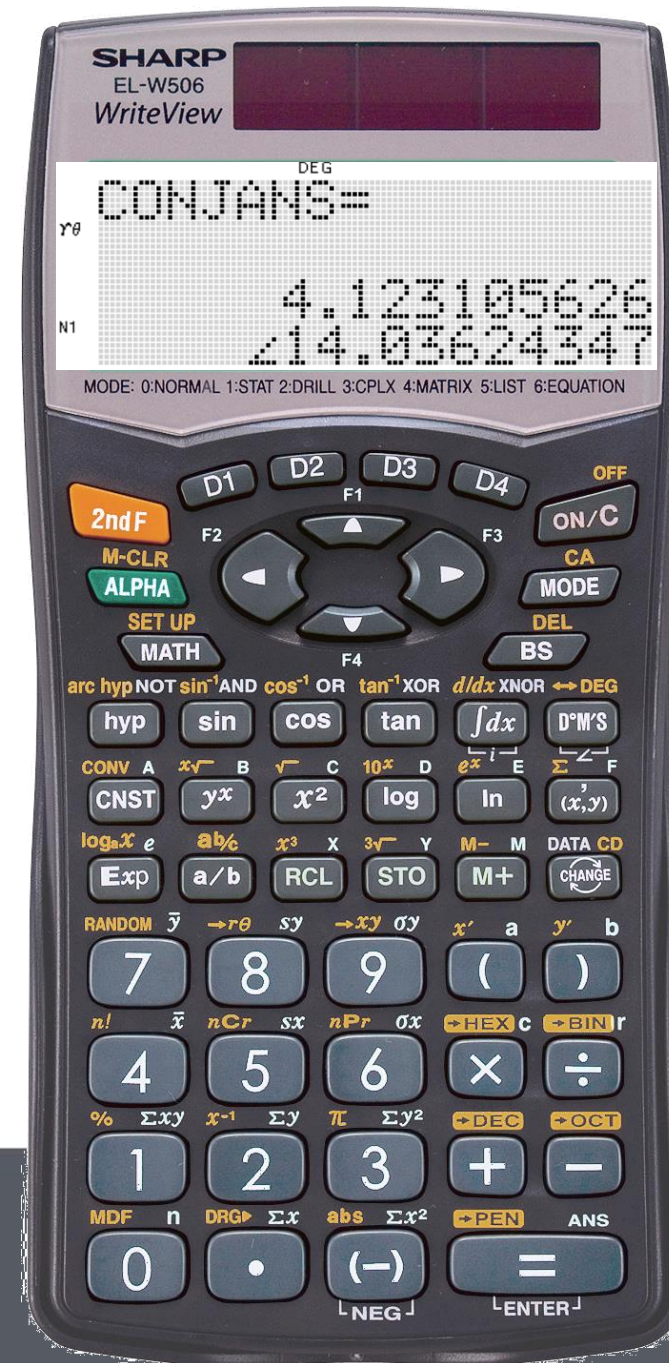
- Press MATH

- 1



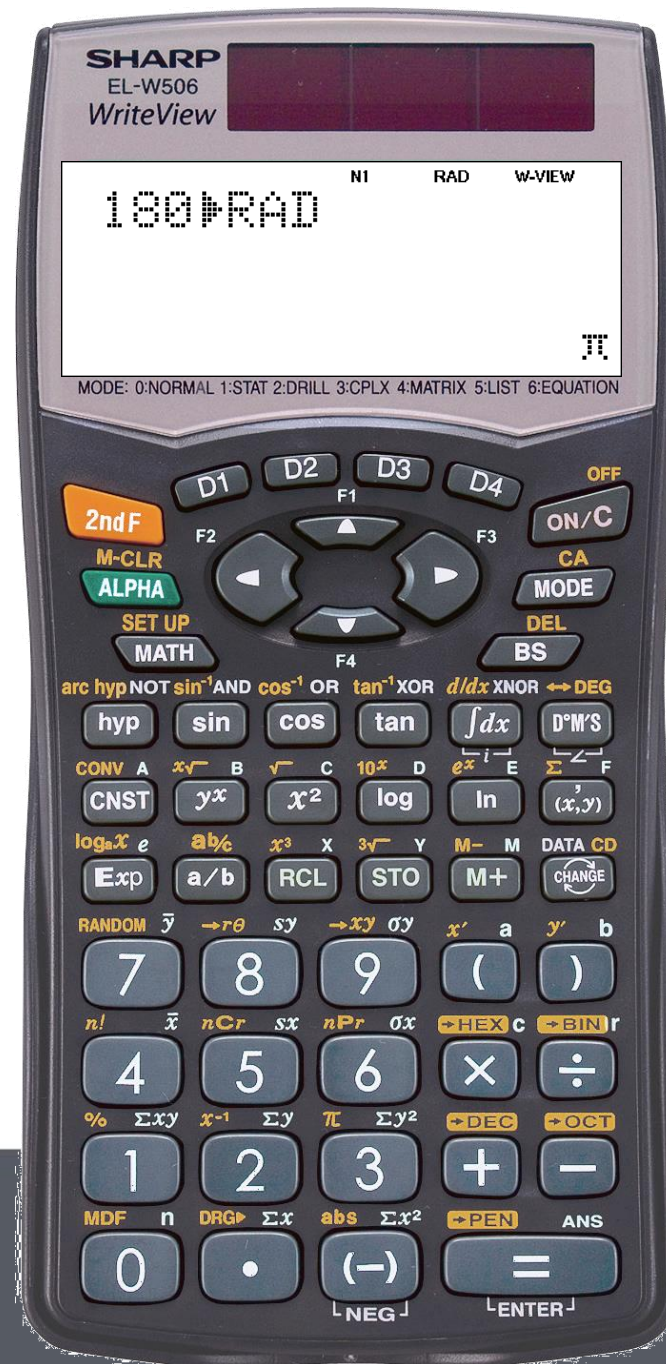
Trigonometric Form

- To find the previous answer in terms of radius and angle:
- Press 
- 8




Degrees / Radians

- Press MODE 0
- e.g. 180°
- Press 180
- Press  



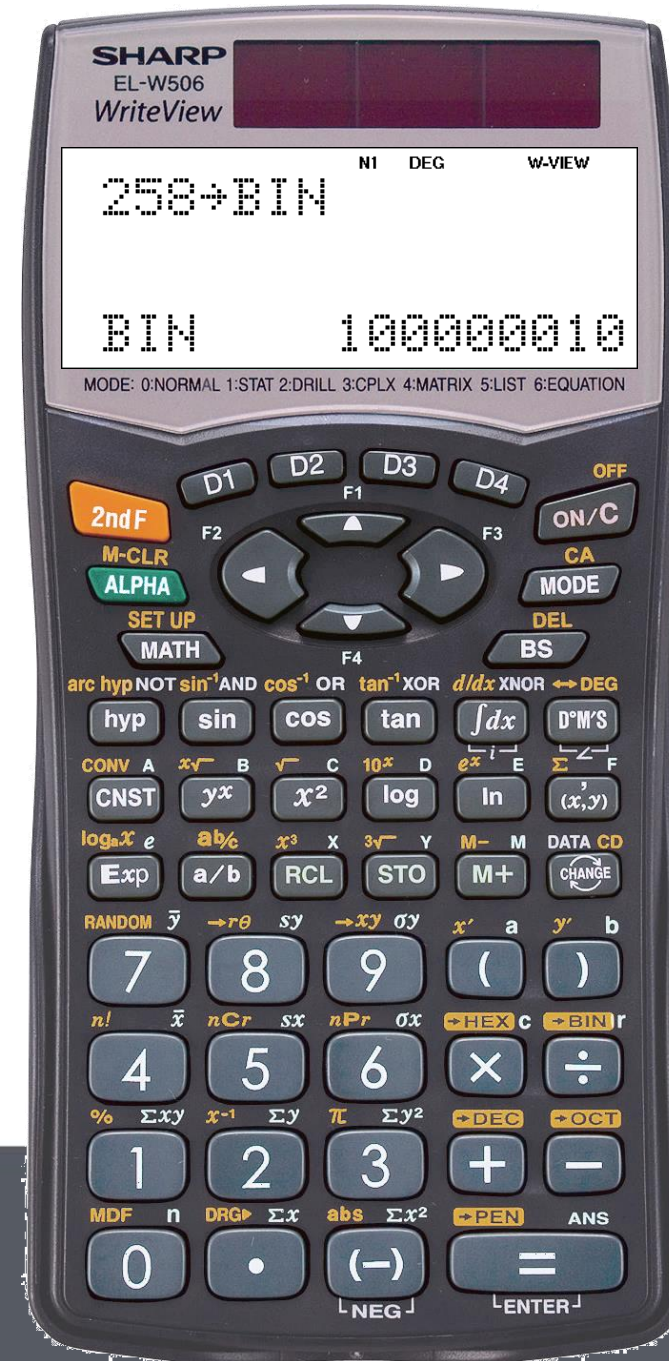
Binary Numbers

- Changing from Decimal to Binary:

- E.g. 258 to binary is:
- Type in 258 **→BIN** r
- Press **2ndF** 




- Changing Binary back to decimal:

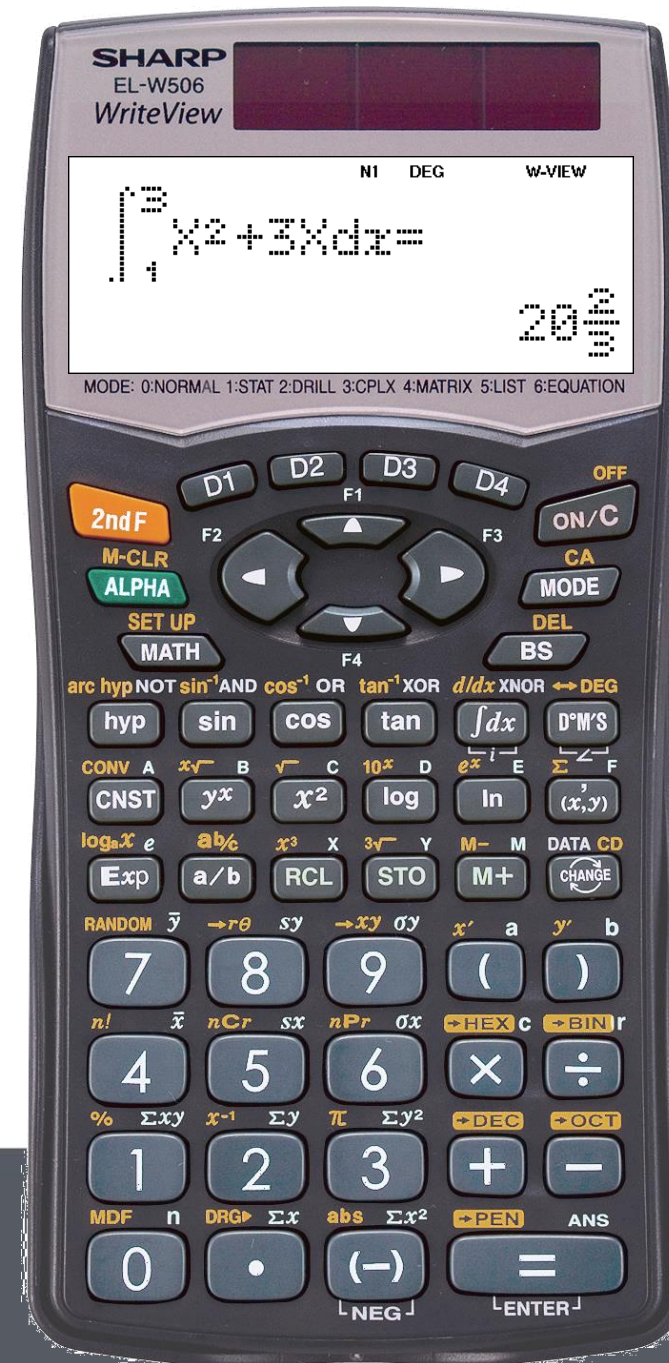
- Type in 10110 **→DEC**
- Press **2ndF** 



Integration

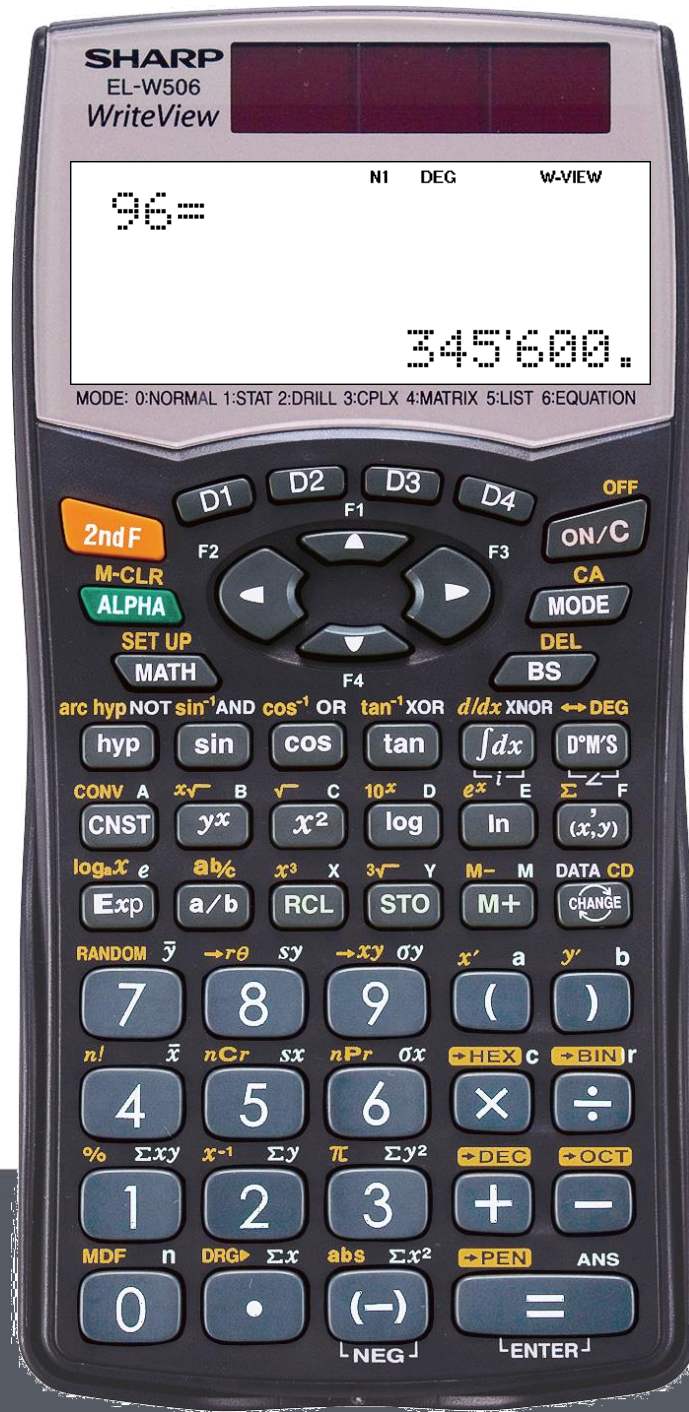
- To find the integral of $x^2 + 3x$ between $x = 1$ and $x = 3$

- Press 
- 1  3
-  **RCL** **RCL** x^2
- +** 3 **RCL** **RCL**
- =**
[ENTER]






Conversions

- Hours to seconds:
 - E.g. 96 hours
 - Type in 96
 - Press MATH
 - 4
- You can also convert hours to minutes by choosing 5



Conversions

E.g Ounces to grams

- 23 ounces:
- Press 23
-  CNST
- Press  until you find
OZ → g
- Press 1 3 
- There are 44 conversions.

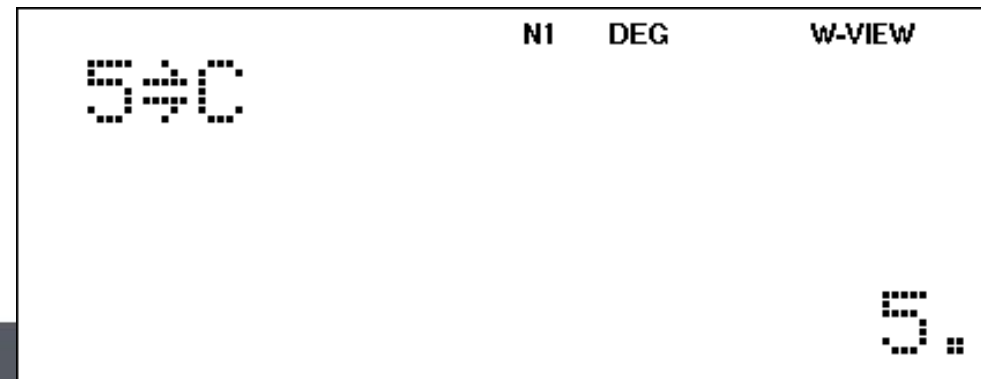
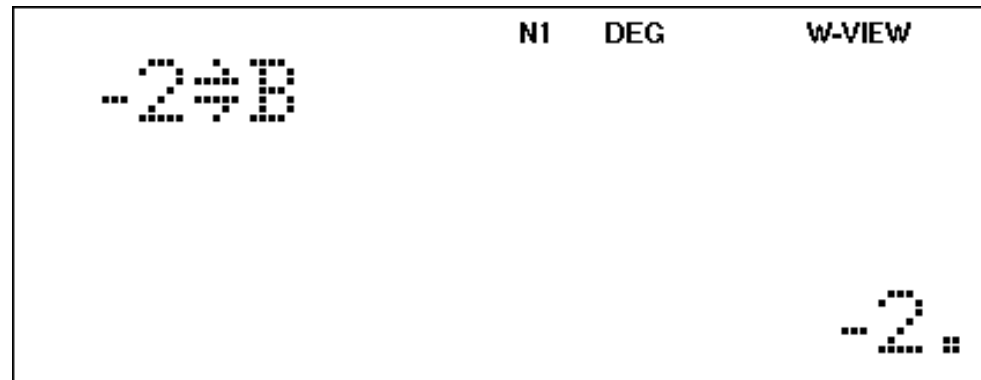
```
          NI  DEG      W-VIEW  
          <CONV-1>      .....  
01: in→cm  
02: cm→in  
↓ 03: ft→m
```

```
          NI  DEG      W-VIEW  
          <CONV-5>      .....  
13: oz→g  
14: g→oz  
↓ 15: lb→kg
```

```
          NI  DEG      W-VIEW  
23→cv13=  
  
652.03896
```


Substitution

- E.g. $A^2 + 3B - C$
- $A = 4$, $B = -2$ and $C = 5$
- Store these values:
 - 4 **STO** **CNST**
 - **(-)** 2 **STO** **yx**
 - 5 **STO** **x²**

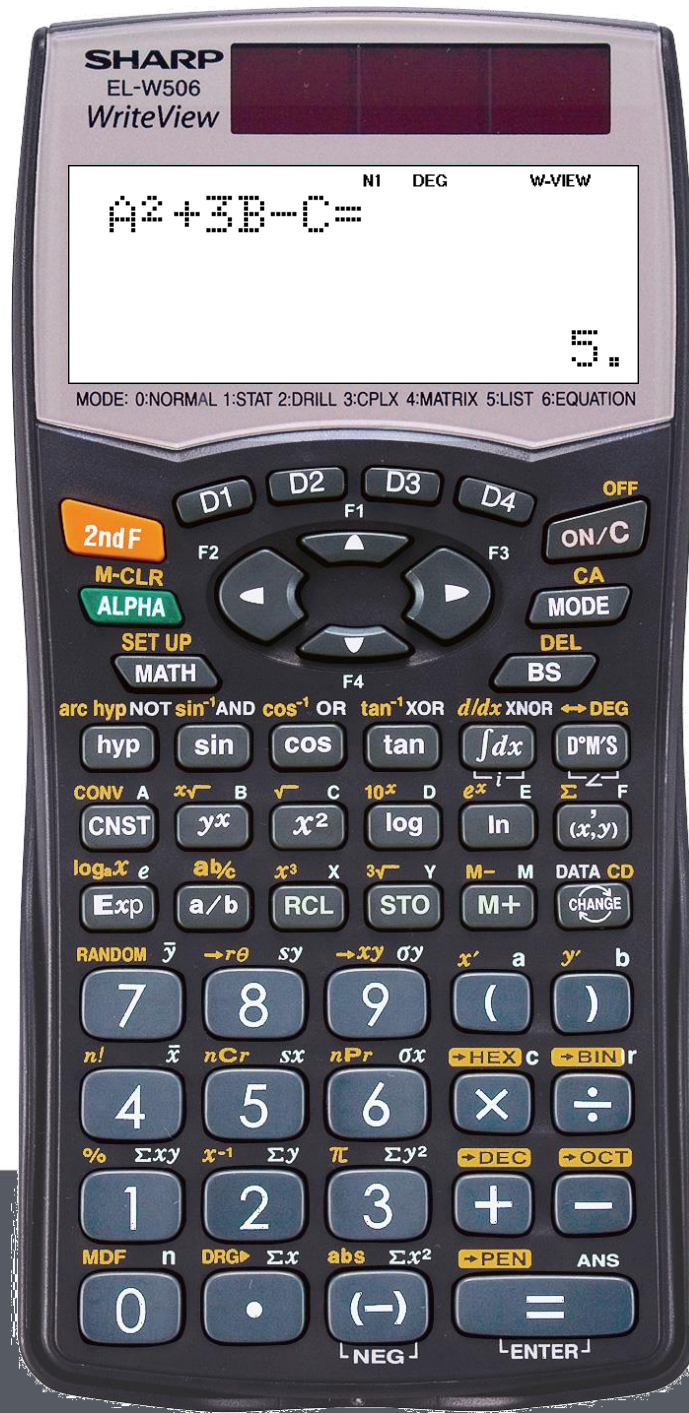


Substitution

- Now type in the expression:



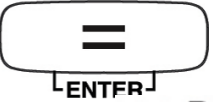


- E.g. $A^2 + 3B - C$

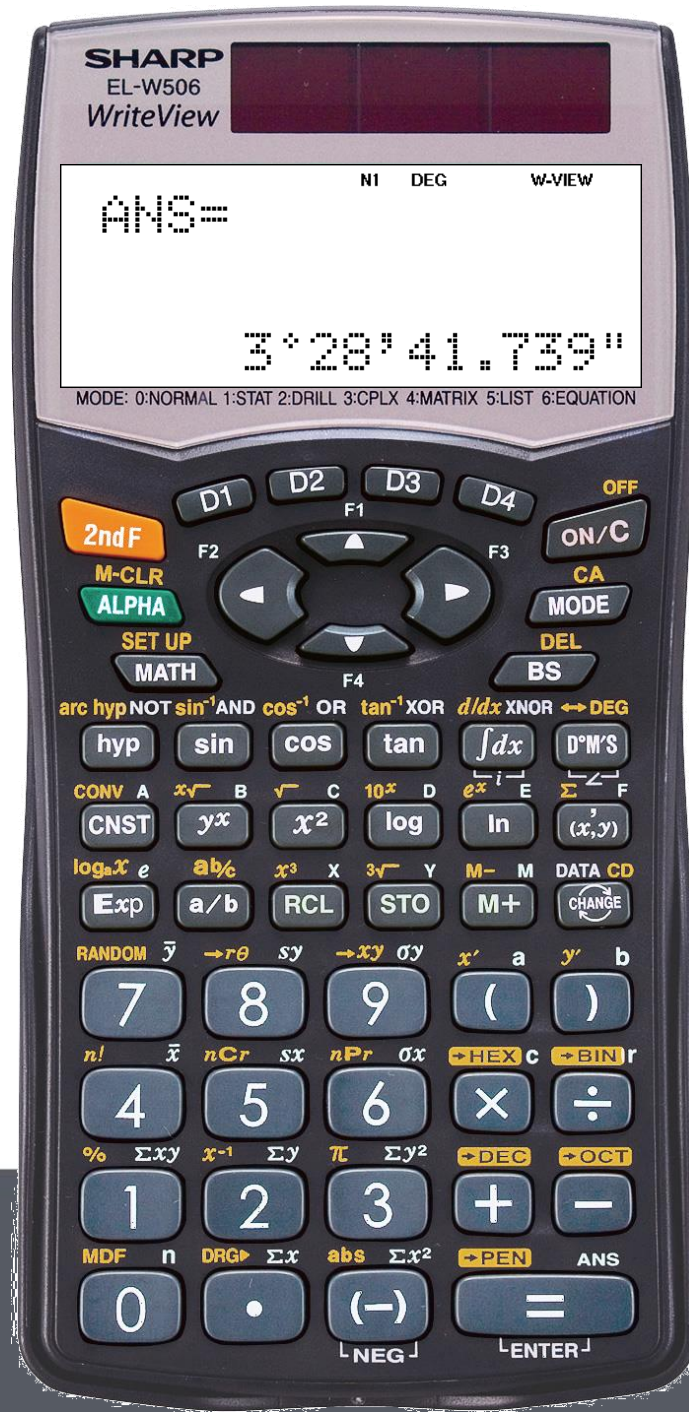
- ALPHA CNST x^2
- + 3 ALPHA yx
- - ALPHA x^2
- =
ENTER



Time

- Speed, distance, time.
- To find time, for example – travel 400km at a speed of 115km/h, how long does it take?

- Press 
- 400 
- 115 
-  



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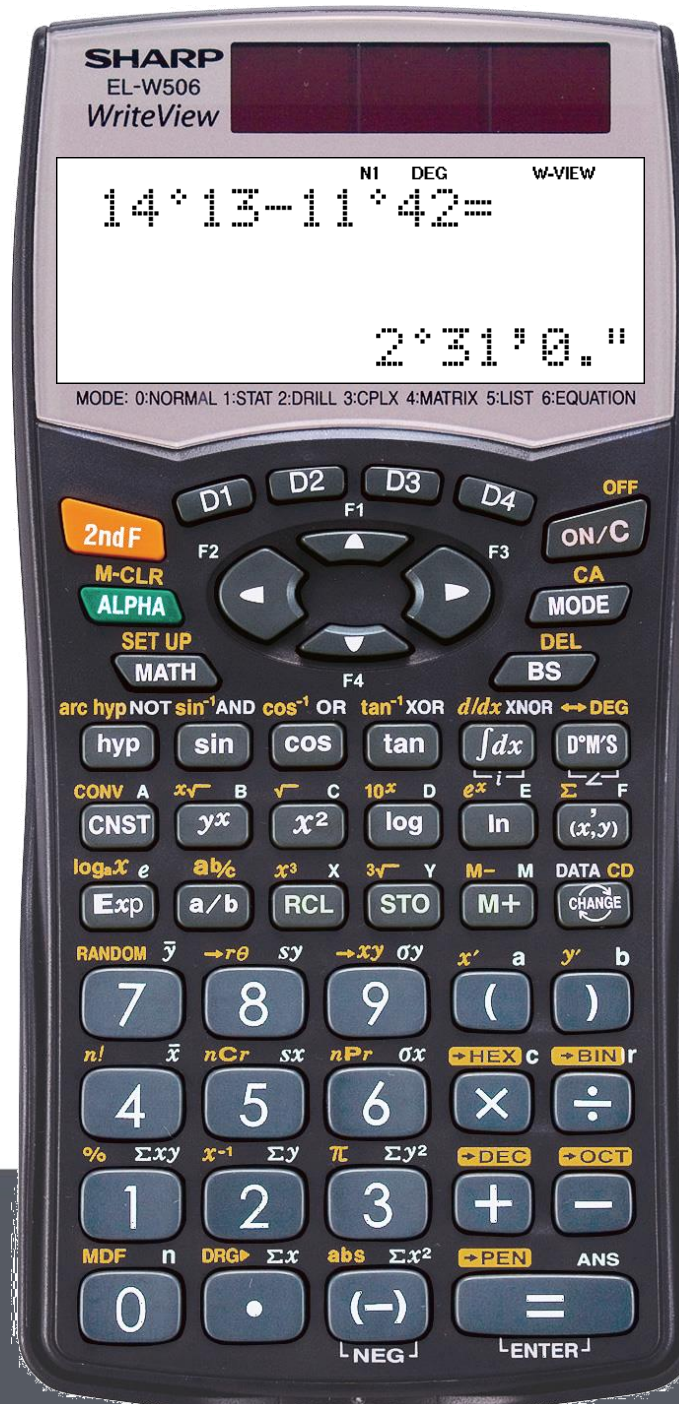
Time

- Leave at 11:42 and arrive at 14:13. How long did it take?

- Press 1 4 $\overset{\leftrightarrow \text{DEG}}{\boxed{\text{D}^\circ\text{M}'\text{S}}}$ 1 3

- $\boxed{-}$ 1 1 $\overset{\leftrightarrow \text{DEG}}{\boxed{\text{D}^\circ\text{M}'\text{S}}}$ 42

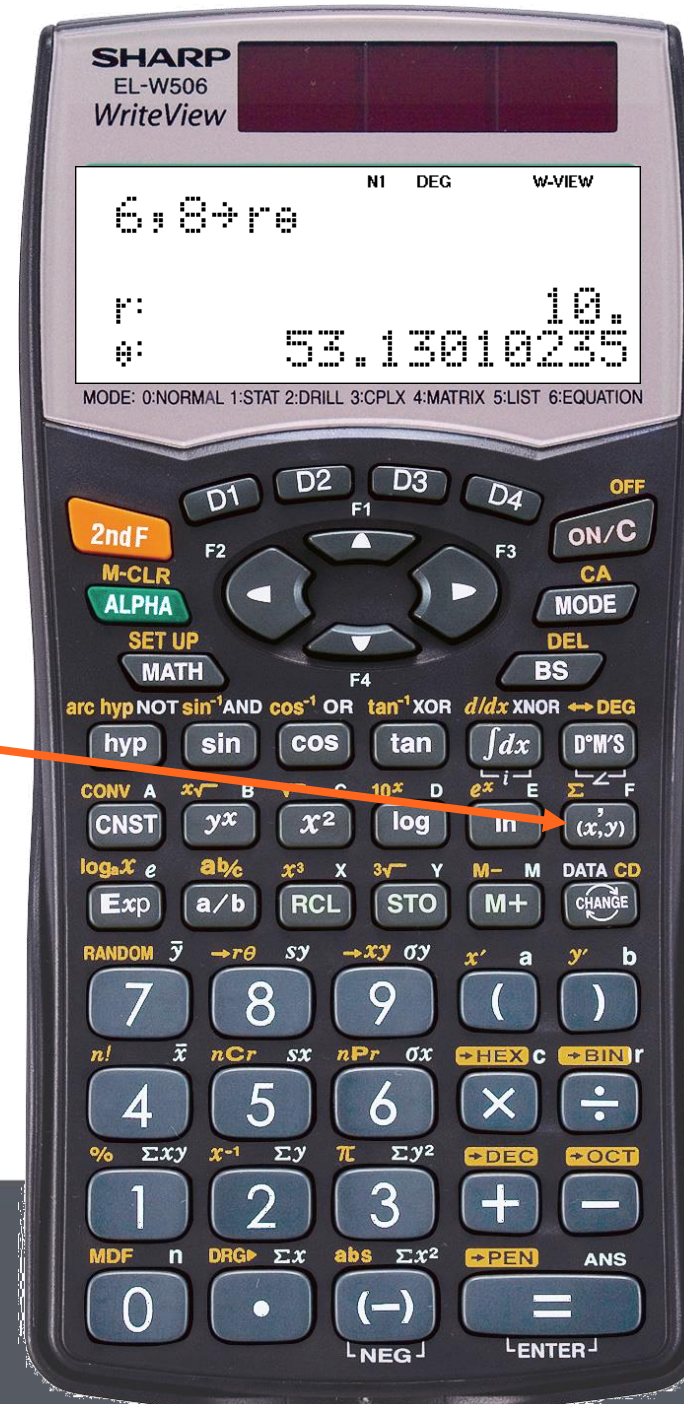
- $\boxed{=}$
└ENTER┘



Pythagoras

- This only works if we are looking for the hypotenuse of a right-angled triangle.
- Type in the shorter sides (or x and y values) of the triangle, e.g. our triangle has sides 6 and 8, so we type in 6 then (x,y) .

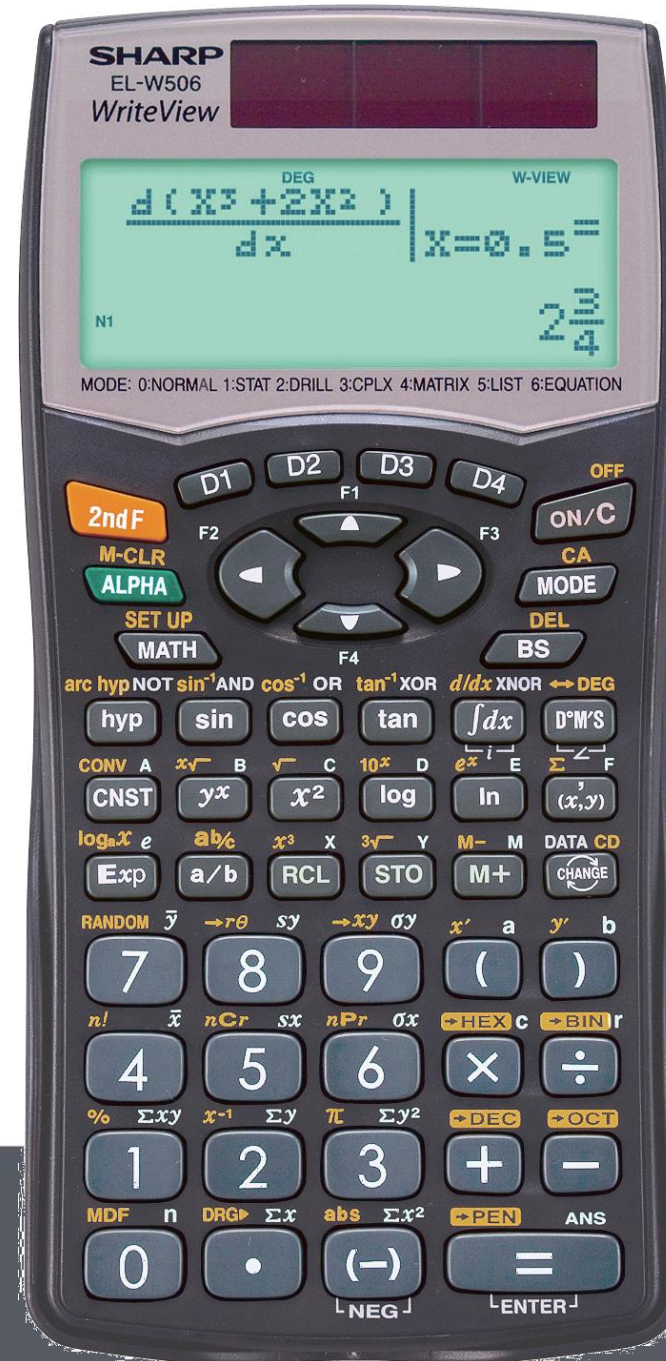
- Now press **2ndF** **8**
- This gives us the hypotenuse (r) and the angle (θ) the hypotenuse makes with the base.



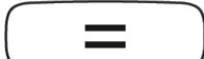







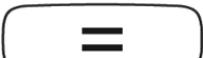

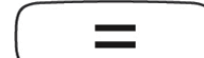




Simultaneous Equations

- Press MODE 6
- $y = 3x^2 + 4x - 8$
- $y = -7x^2 + 5x - 10$

- Choose 0



Simultaneous Equations cntd:

- $a1 = 3$  
- $b1 = 4$  
- $c1 = (-) 8$   
- $a2 = (-) 7$   
- $b2 = 5$  
- $c2 = (-) 10$   





N1 DEG
a1 = 3.
b1 = 4.
↓

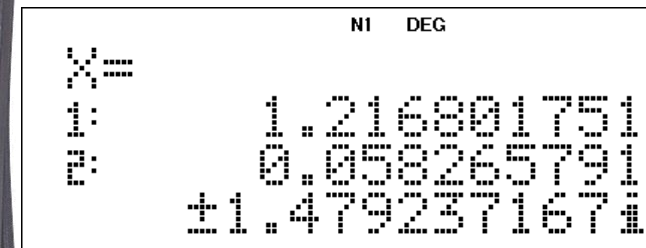
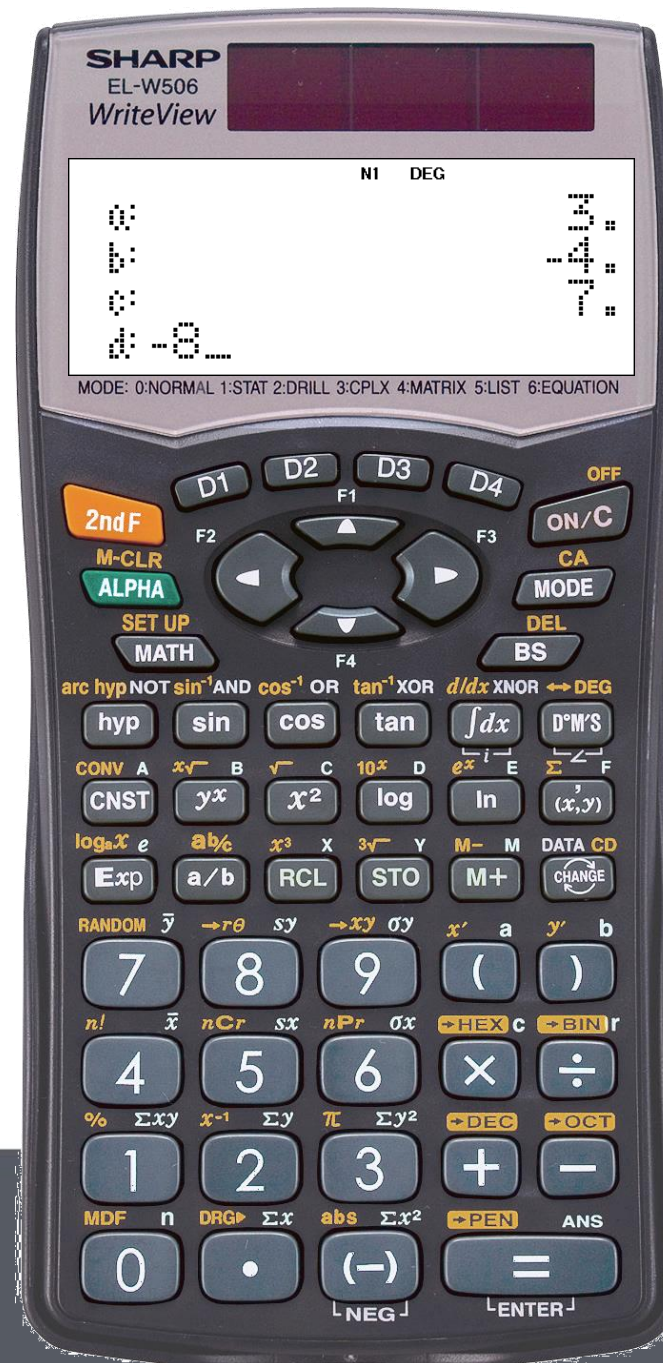
N1 DEG
↑ c2 = 10.
=

N1 DEG
R: 0.
V: -2.
D: 43.

Cubic Equation

- Press MODE 6
- 3 (For Cubic)
- $y = 3x^3 - 4x^2 + 7x - 8$

- $a = 3$ 
- $b = (-) 4$ 
- $c = 7$ 
- $d = (-) 8$ 



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Thank you 😊

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