Getting the Most of Your TI-84 CE Graphing Calculator

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TEXAS INSTRUMENTS
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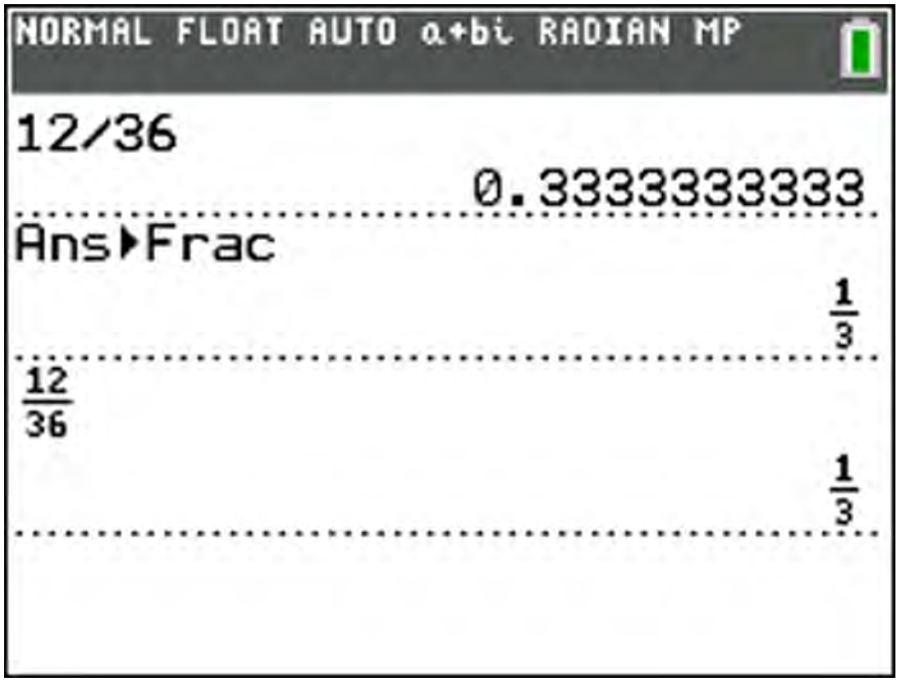
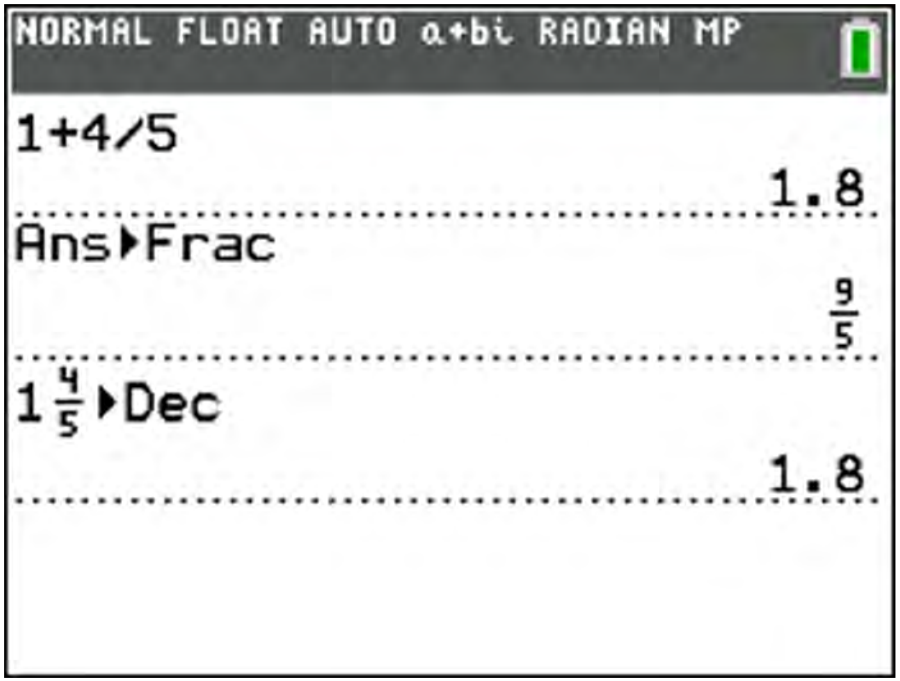
Middle Grades Math:

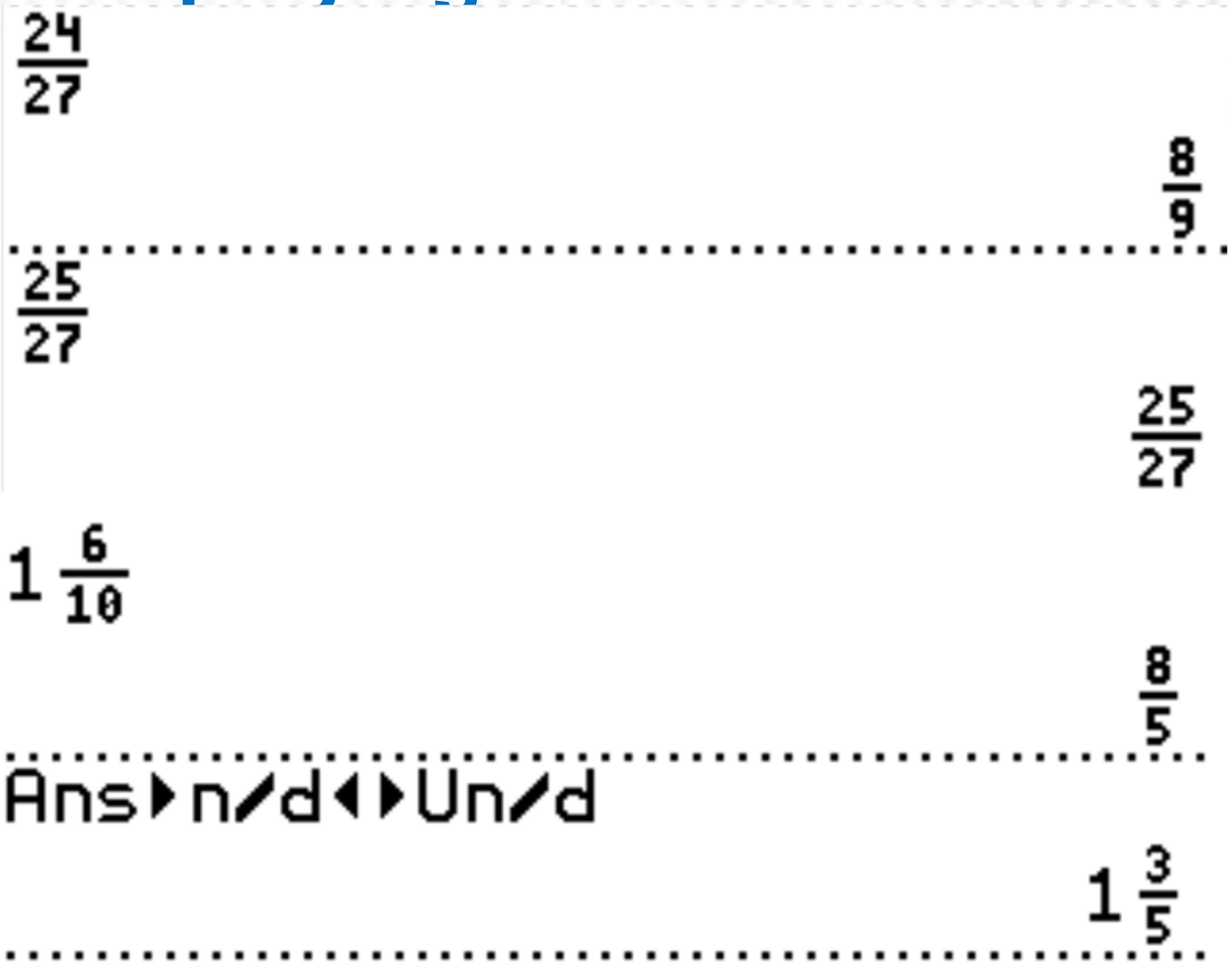
- Fractions
- proportions

Pretty Fractions (vs. Ugly Fractions)

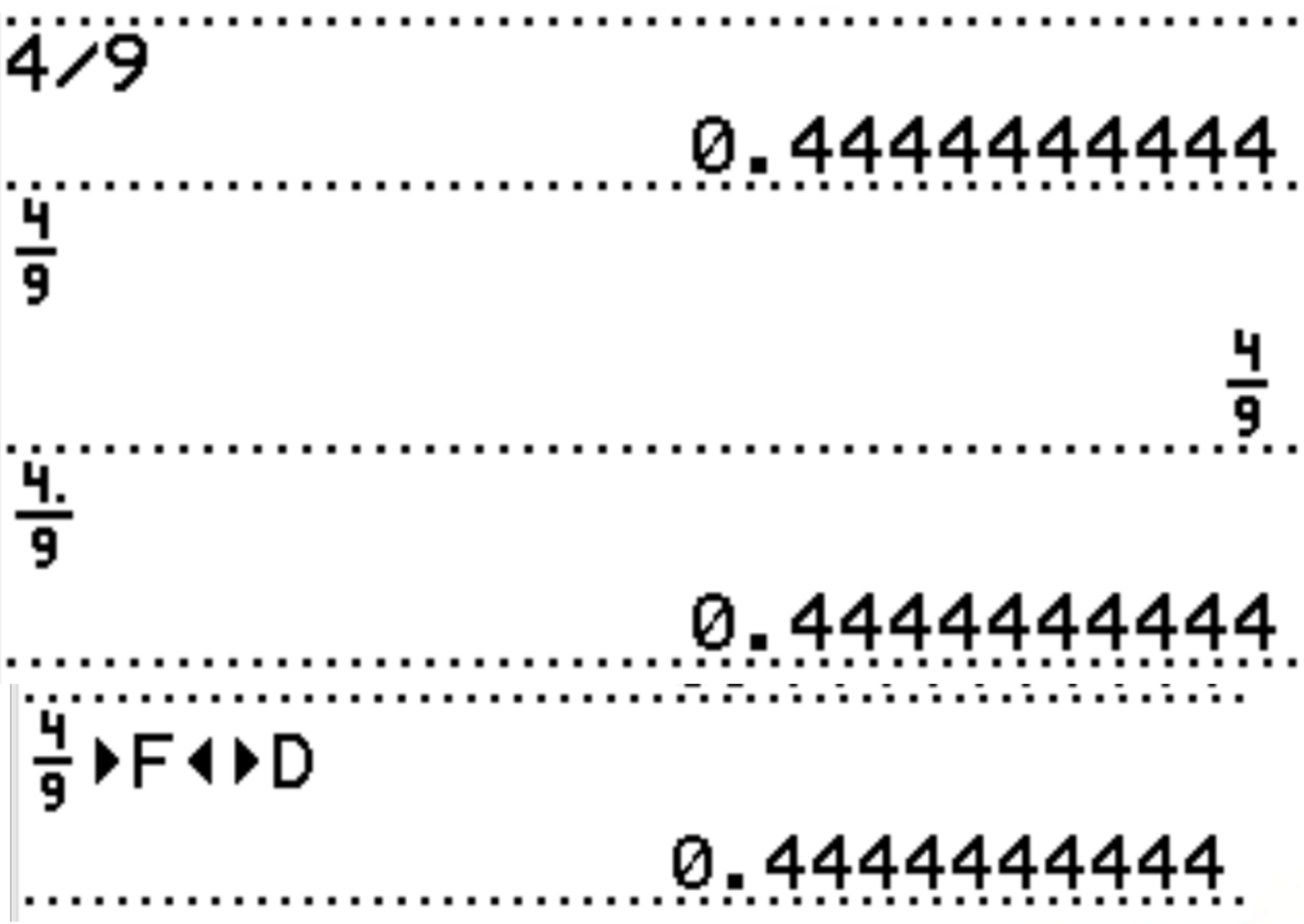




Simplifying Fractions



Converting from fractions to decimals and vice versa



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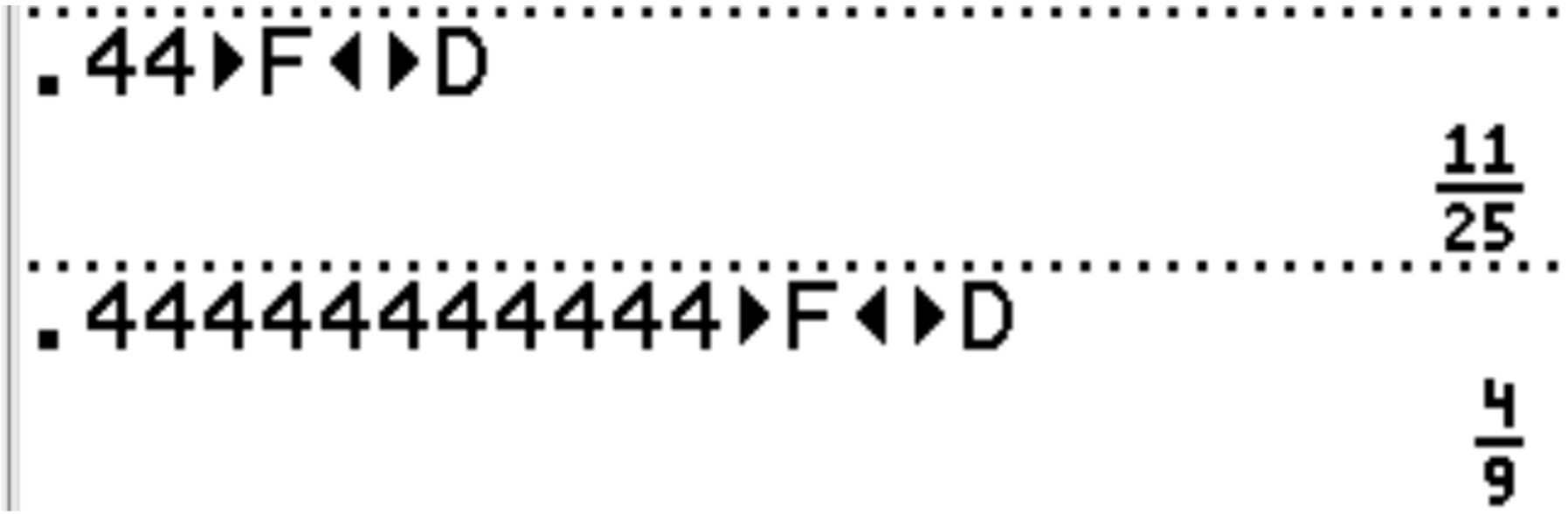
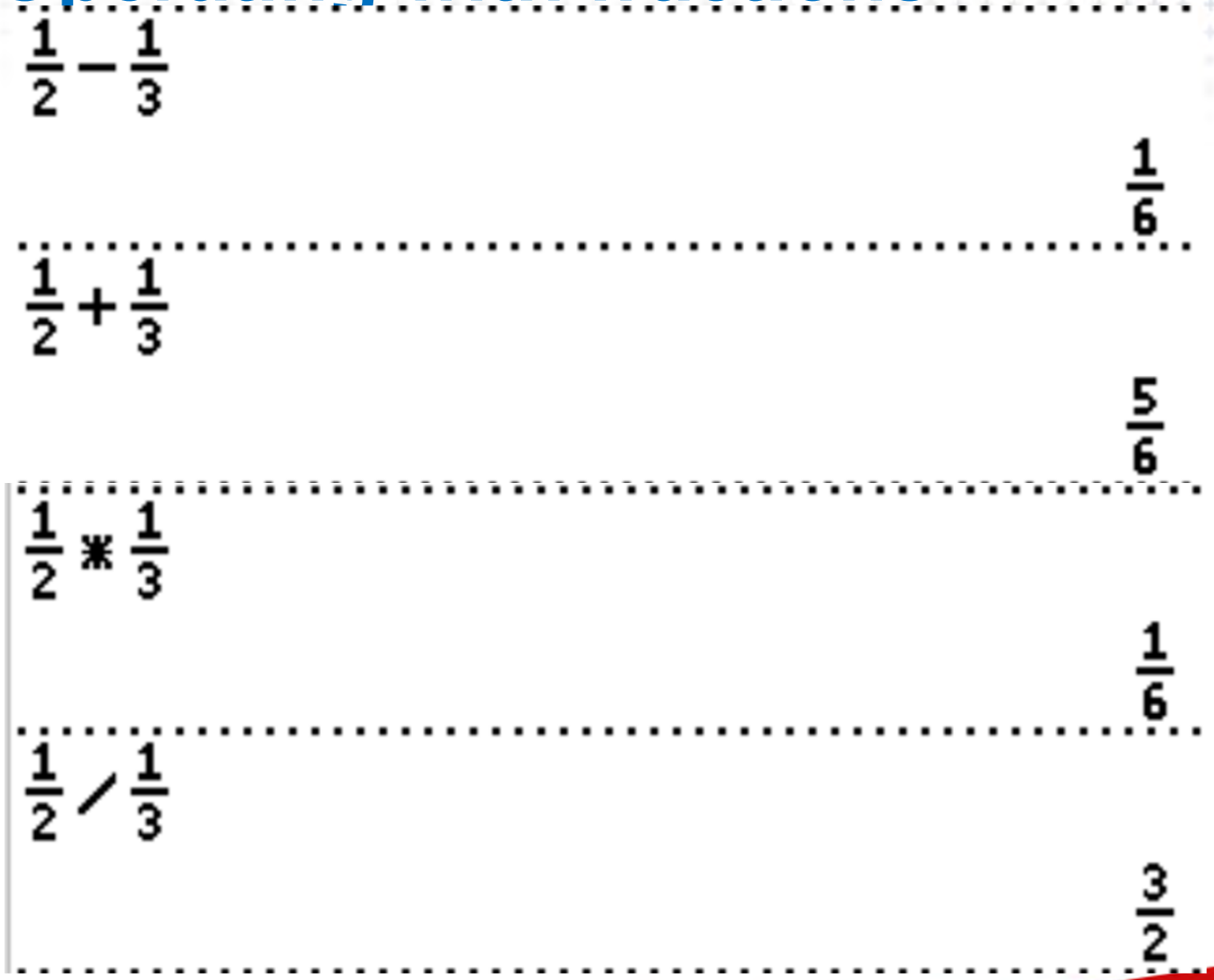


Operating with fractions



- "Old School" method for solving proportions

Something weighing 160 pounds on Earth is 416 pounds on Jupiter. If something weighs 120 pounds on Earth, how many pounds would it weigh on Jupiter?

$$\frac{Earth}{Jupiter} = \frac{160}{416} = \frac{120}{x}$$

$$160x = 416*120$$

$$x = \frac{416*120}{160}$$

$$x = 312$$

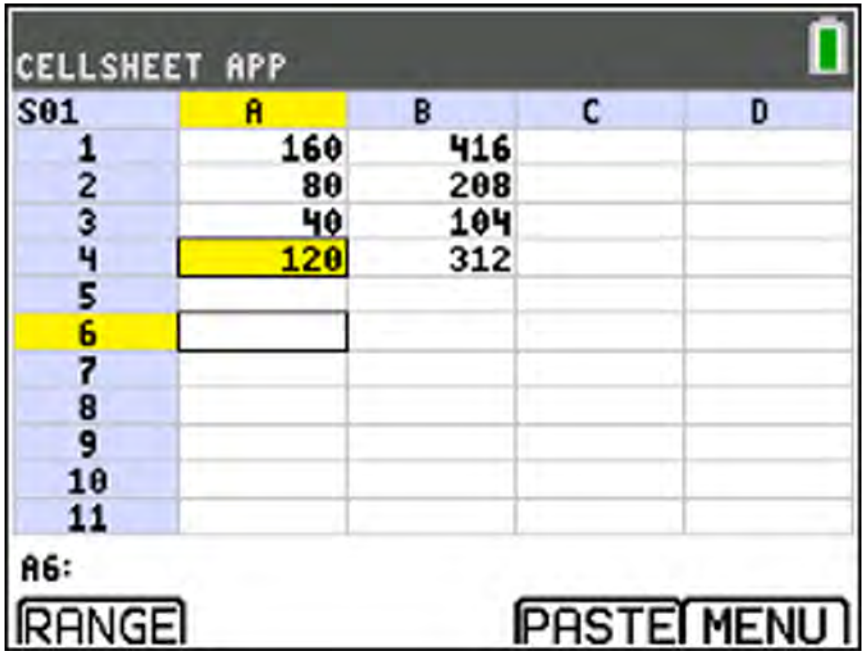
Ratio Tables

Something weighing 160 pounds on Earth is 416 pounds on Jupiter. If something weighs 120 pounds on Earth, how many pounds would it weigh on Jupiter?

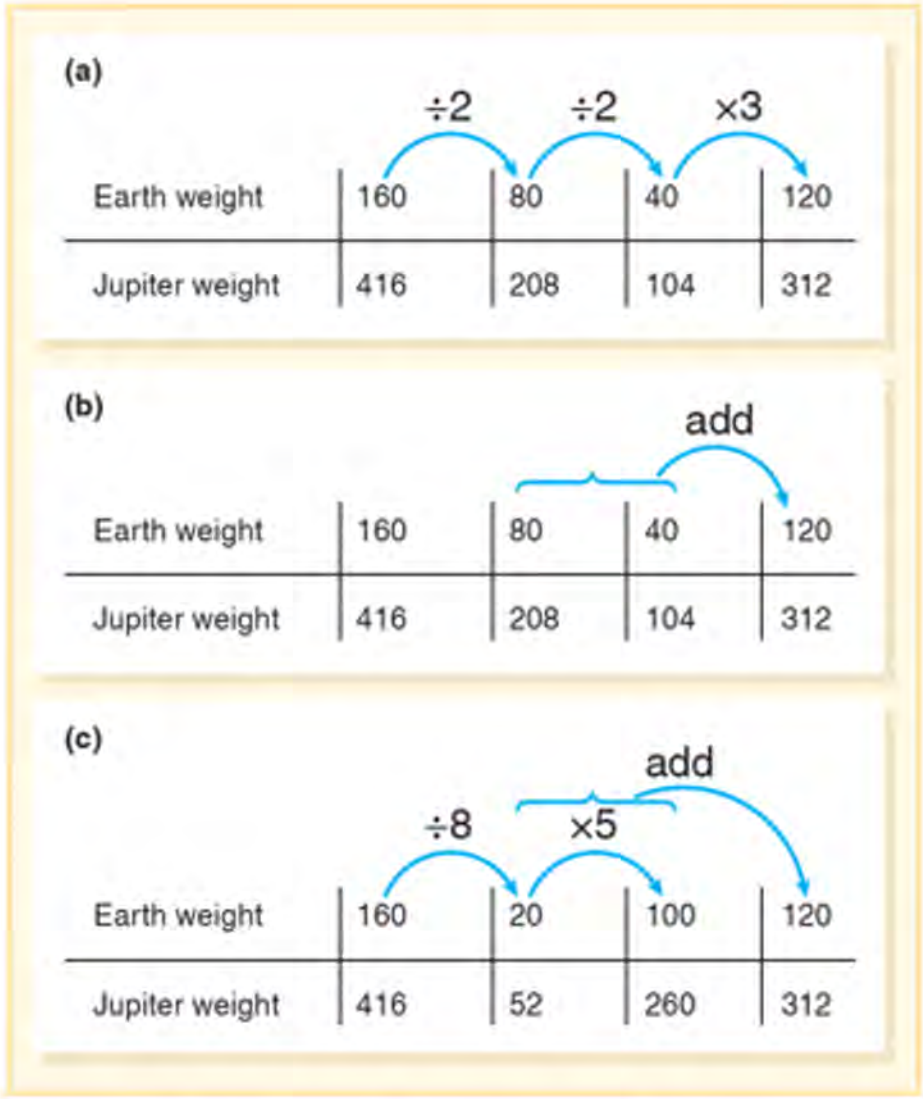
(b)

add

Earth weight	160	80	40	120
Jupiter weight	416	208	104	312



Ratio Tables

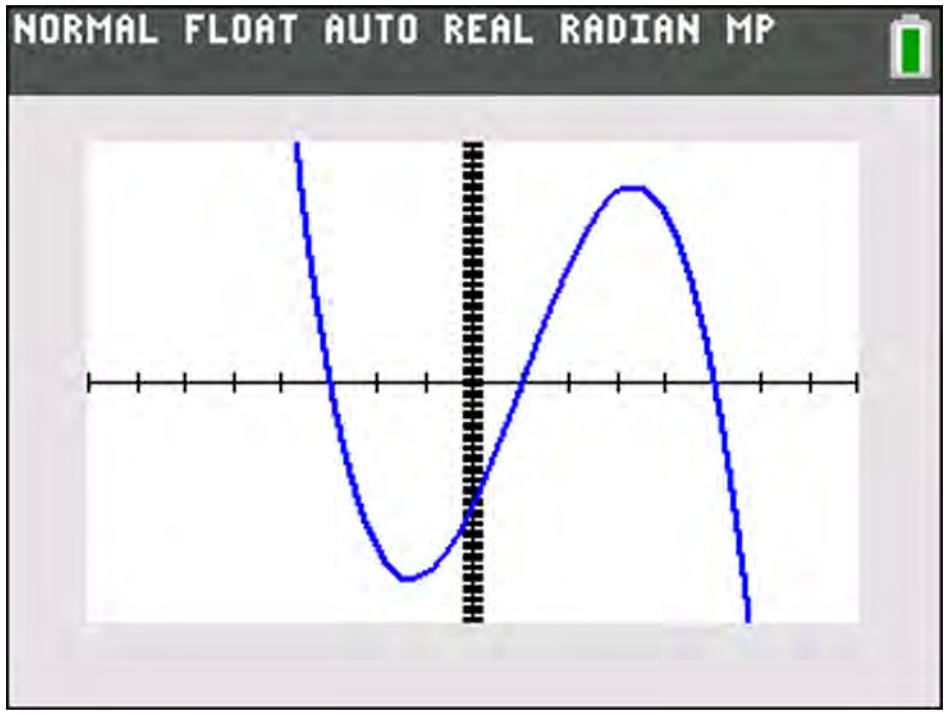


Algebra I and II

- polynomial functions
- rational functions

Turning Points/Extrema/ Inc&Dec/Intercepts

$Y_1 = -2X^3+6X^2+26X-30$



window
and
zoom options
and
calc
(2nd trace: min, max, zero)

End Behavior

$Y_1 = -2X^3+6X^2+26X-30$

homescreen

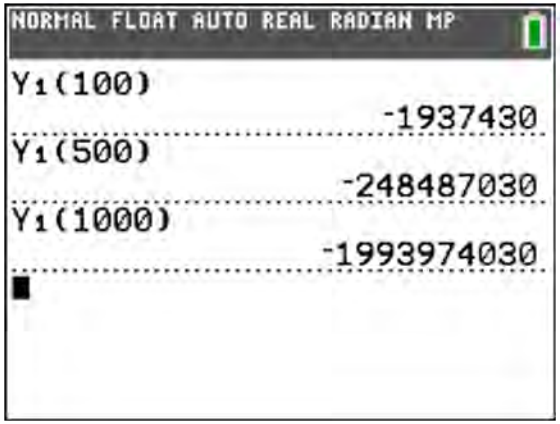
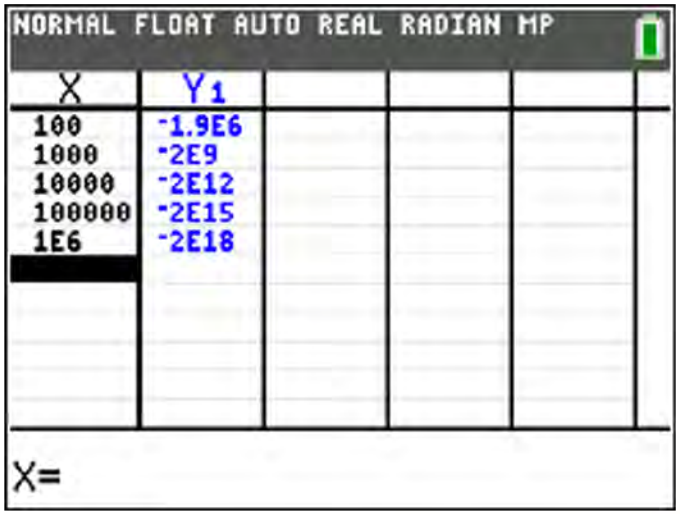


table and tblset



Quadratic Formula

```
PROGRAM:QUADFORM
:Prompt A,B,C
:(-B+√(B²-4AC))/(2A)→M
:(-B-√(B²-4AC))/(2A)→N
:Disp M,N
```

```
prgmQUADFORM
A=?1
B=?0
C=?-4
                    2
                   -2
                 Done
```

```
prgmQUADFORM
A=?1
B=?0
C=?4
                   2i
                  -2i
                 Done
```

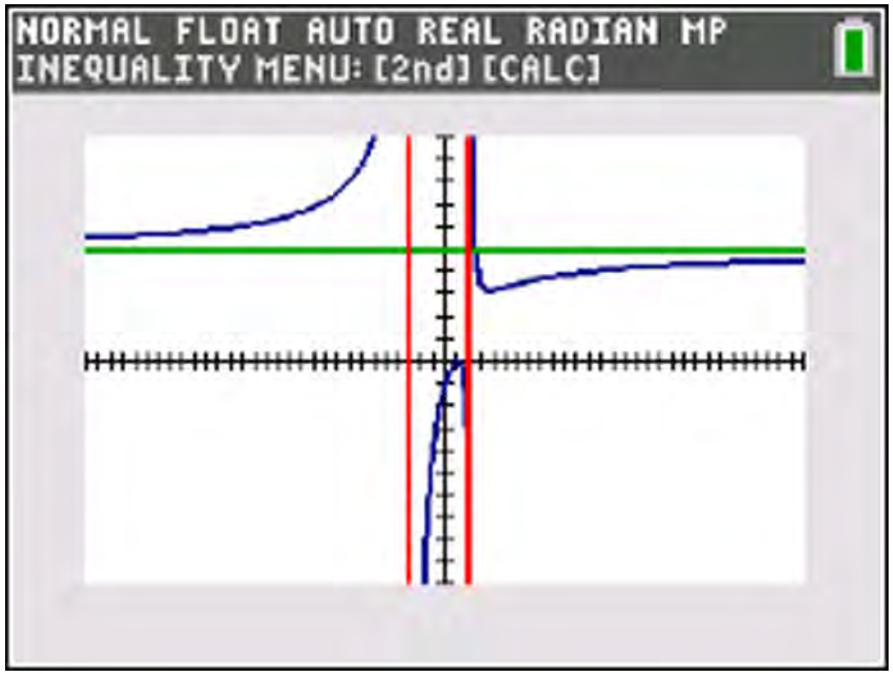
```
prgmQUADFORM
A=?1
B=?0
C=?-5
          2.236067977
         -2.236067977
                 Done
```

$\sqrt{5}$

2.236067977

Rational Functions

$$Y_2 = \frac{5(X-1)^2}{(X-2)(X+3)}$$



Asymptotes
End Behavior

Inequalz App

Asymptotes

$$Y_2 = \frac{5(X-1)^2}{(X-2)(X+3)}$$

$$Y_3 = 5$$

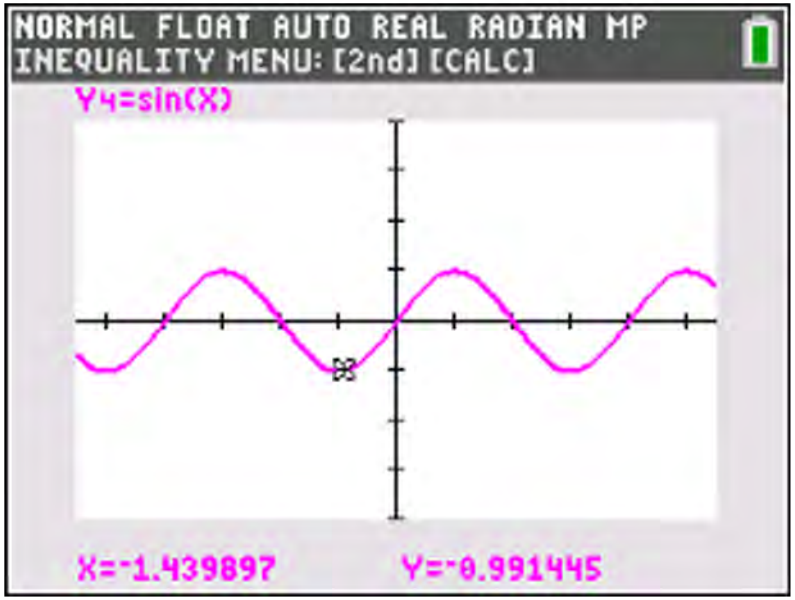
$$X_1 = 2$$

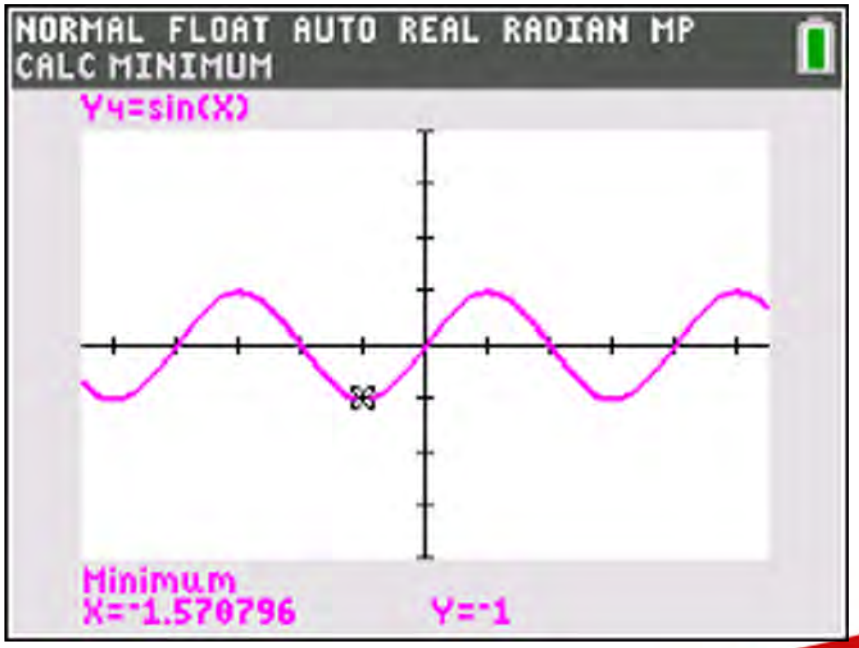
$$X_2 = -3$$

Precalculus/Calculus

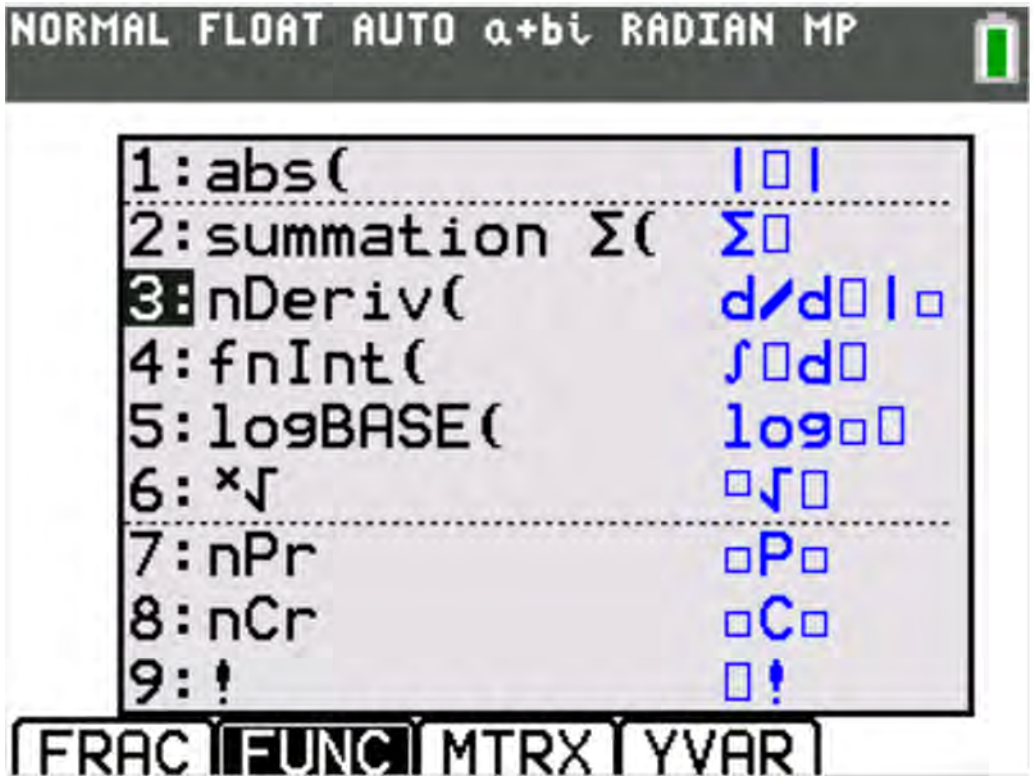
- Extrema
- Limits

Extrema Graphically





Numerical Derivative



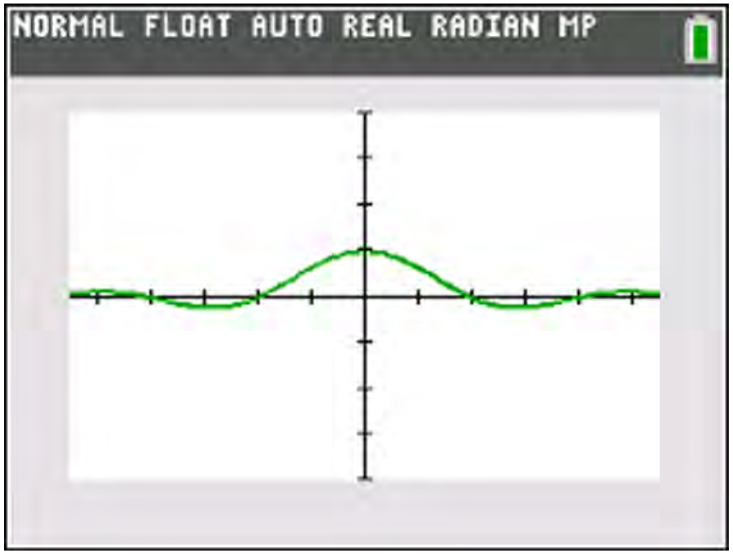
$$\frac{d}{dX}(Y_4)\Big|_{X=-\pi/2}$$

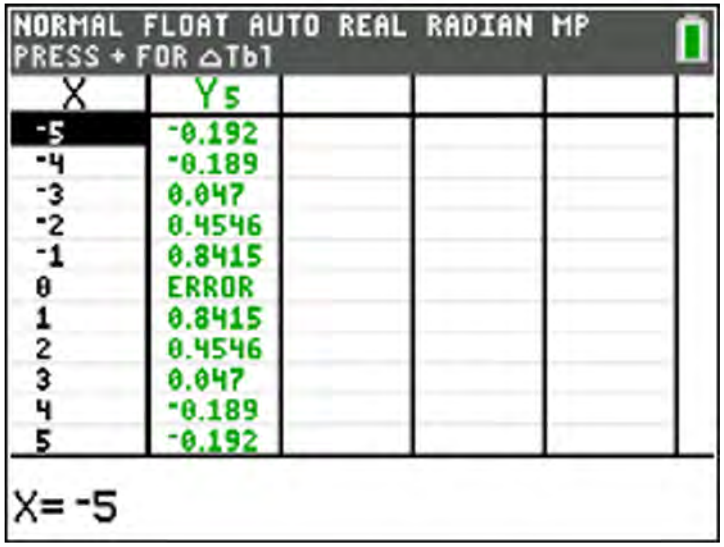
0

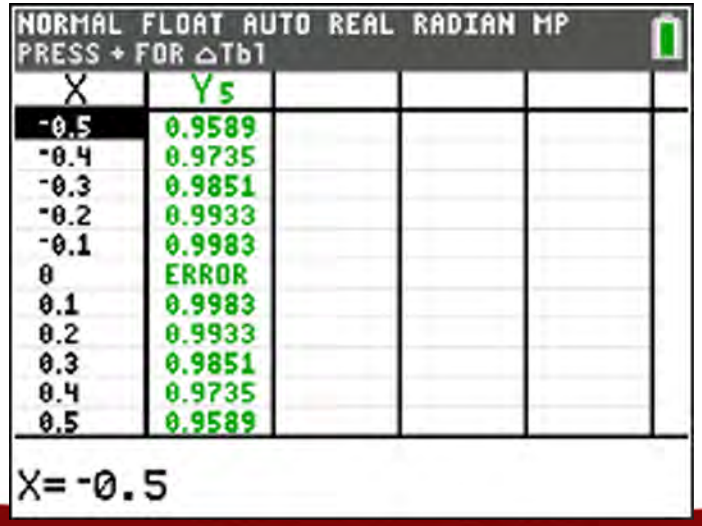
Limits

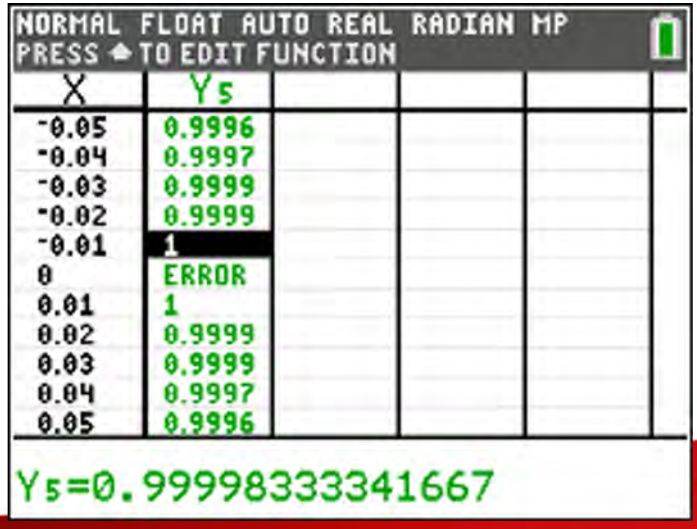
$$\lim_{x \to 0} \left(\frac{\sin x}{x} \right)$$

$Y_5 = \frac{\sin(X)}{X}$









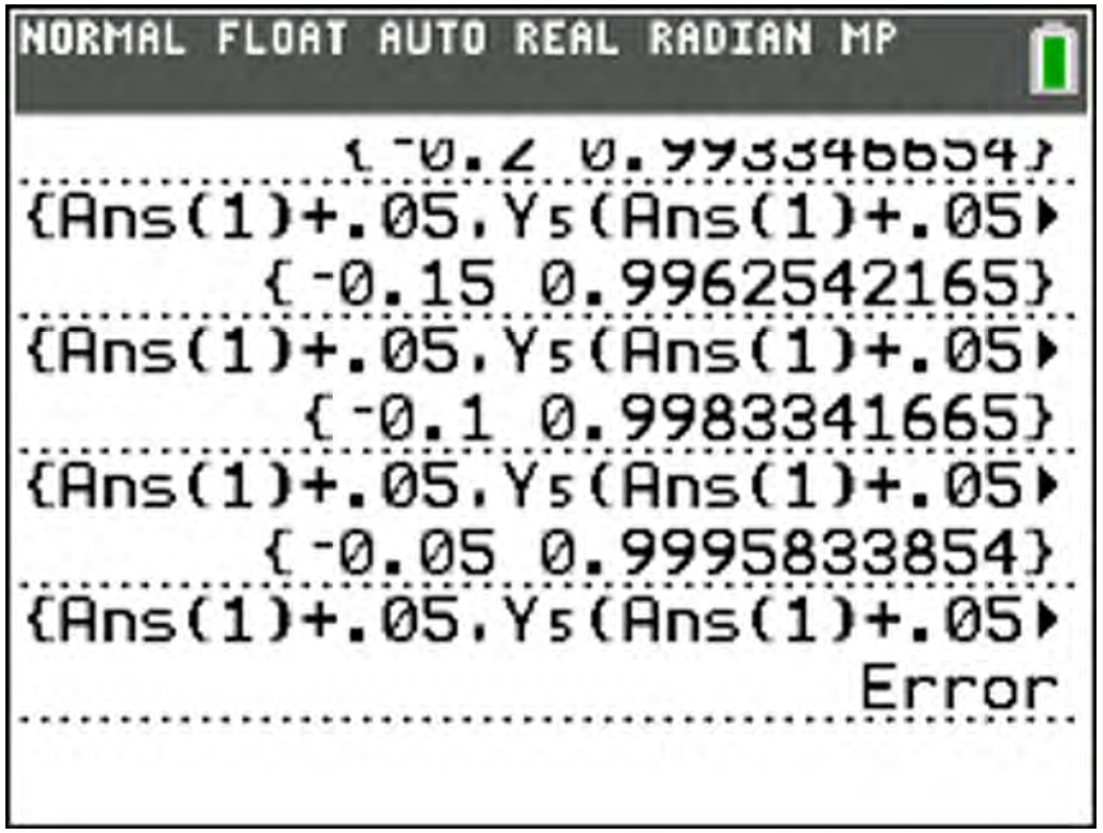
evaluating on Homescreen

$$Y_5 = \frac{\sin(X)}{X}$$

```
                    Y5(Ans(1)+.05)}
{-.5,Y5(-.5)}
          {-0.5 0.95885107 72}
{Ans(1)+.05,Y5(Ans(1)+.05▶
          {-0.45 0.96659007 58}
```

evaluating on Homescreen

$$Y_5 = \frac{\sin(X)}{X}$$



Geometry

- area of rectangle with fixed perimeter
- perimeter of rectangle with fixed area
- slope between two points
- distance between two points

perimeter of rectangle with fixed area

At the local craft fair, the rectangular displays must have an area of 16 sq. meters .

a. What dimensions can he use?

b. What dimensions would minimize the amount of materials he needs to border his display?

$$A = l * w$$

$$16 = l * w$$

$$l = \frac{16}{w}$$

$$P = 2l + 2w$$

$$P = 2\left(\frac{16}{w}\right) + 2w$$

$$P = \frac{32}{w} + 2w$$

area of rectangle with fixed perimeter

area of rectangle with fixed perimeter

Mia purchased an underground dog fence that includes 500 feet of wire. She wants to fence in a rectangular region using all of the wire.

a. What dimensions could Mia use to construct her fence?

b. What is the area of each region?

c. What dimensions maximize the area?

All dimensions must be a whole number of feet.

$$P = 2l + 2w = 500$$

$$l + w = 250$$

$$w = 250 - l$$

$$A = l * w$$

$$A = l * (250 - l)$$

area of rectangle with fixed perimeter

CELLSHEET APP

FIXEDP	A	B	C	D
1	LENGTH"	WIDTH"	AREA"	
2	10	240	2400	
3	30	220	6600	
4	100	150	15000	
5	120	130	15600	
6	125	125	15625	
7	130	120	15600	
8	150	100	15000	
9	200	50	10000	
10	225	25	5625	
11				

A1: "LENGTH"

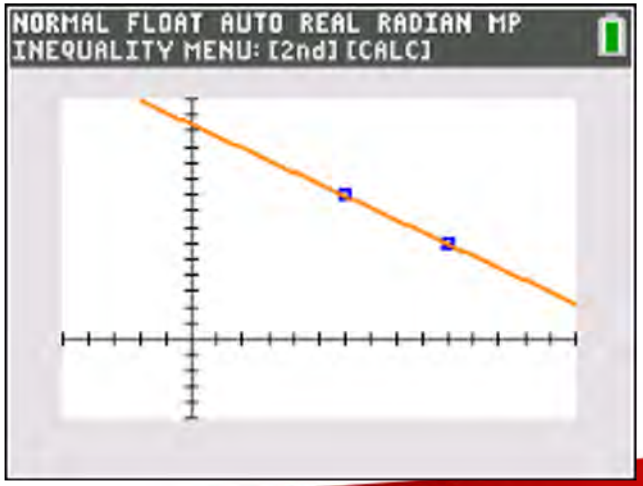
RANGE HELP MENU

Slope (and y-intercept)

(10, 6) and (6, 9)

```
NORMAL FLOAT AUTO REAL RADIAN MP
EDIT MENU: [alpha] [f5]
PROGRAM:SLOPE
:ClrHome
:Prompt A,B,C,D
:(B-D)/(A-C)→E
:Disp "SLOPE IS"
:Disp E▸Frac
:B-EA→F
:Disp "Y INTERCEPT IS"
:Disp F▸Frac
:
```

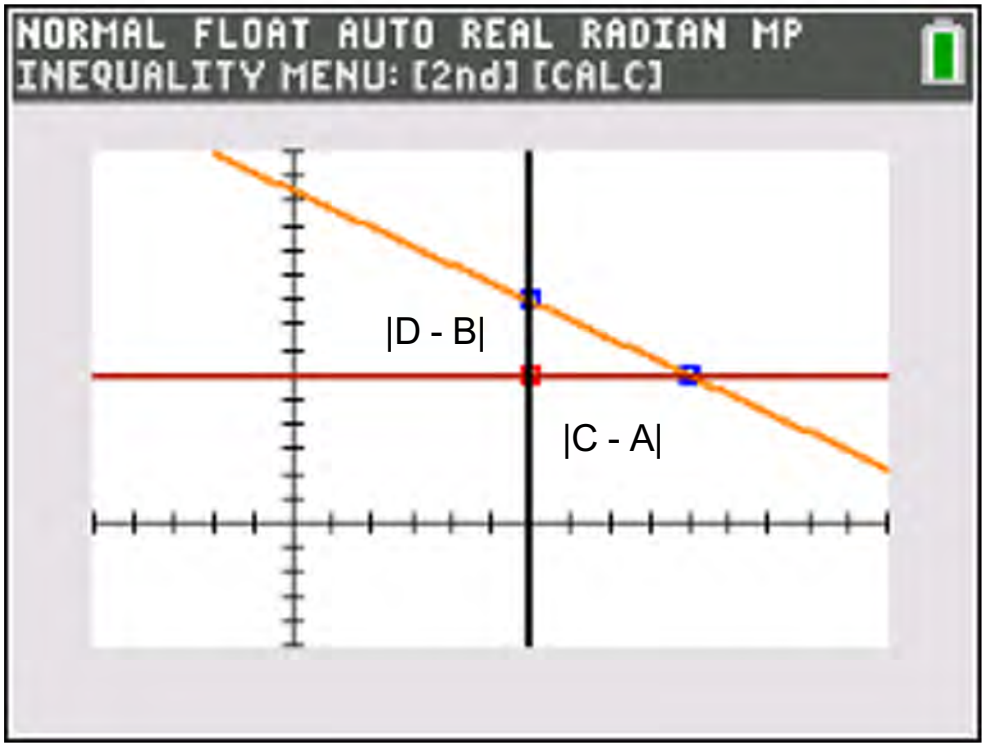
```
NORMAL FLOAT AUTO REAL RADIAN MP
H=?10
B=?6
C=?6
D=?9
SLOPE IS
                          -3/4
Y INTERCEPT IS
                          27/2
                          Done
```



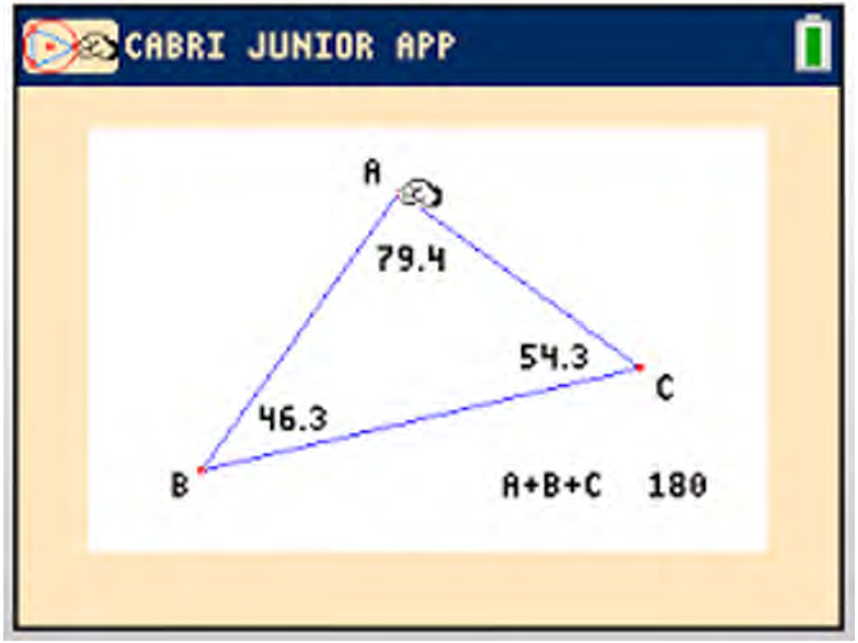
(10, 6) and (6, 9)

```
NORMAL FLOAT AUTO REAL RADIAN MP
EDIT MENU: [alpha] [f5]
PROGRAM:DISTANCE
:Input A,B,C,D
:√((D-B)²+(C-A)²)→E
:Disp E
:
```

```
prgmDISTANCE
A=?10
B=?6
C=?6
D=?9
                    5
                 Done
```



Future Learning: Cabri Jr



What is one thing you learned today that you think you will take back and use in your classroom?

What are some activities that we have explored that you would like to explore more on your own?

Professional development

Webinars, tutorials, workshops and courses delivered by experienced, certified T³™ instructors to help you meet your classroom goals. For more than 25 years, the T³™ organization has been providing professional development that combines content-rich curriculum, hands-on technology training and compelling instruction on best teaching practices.

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Introduce students to physical computing and put coding in motion with short activities for TI-84 Plus CE and TI-Innovator™ technology.

10 Minutes of Code

TI-84 Plus family

Start Here

Explore the basics of coding with short, easy-to-master lessons that include everything beginners need to succeed.

10 Minutes of Code

TI-Innovator™ technology

Start Here

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Take the next step

Start Here

New Activities Available!
Encourage students who have some programming experience to build on their knowledge with activities that take them a little deeper into coding.

Teachers' Lounge

Learn more about TI Codes

Start Here

Find resources to help students develop the foundational logic and mathematics of programming.

Feel free to contact us about any questions or any materials you would like us to share.

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