

Auburn Hills IIC

TI-83/84 CALCULATOR SEMINAR #3

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1 EQUATIONS SET EQUAL TO ZERO

Solve: $4X - 6 = 0$.

Change to: $Y = 4X - 6$

Press: **Y=** **CLEAR**

$\backslashY1=$ $4X - 6$ **ZOOM** **6** ZStandard

Press: **2nd** **CALC** **TRACE** **2** zero

Left Bound? Press **▶** until cursor is just left of (and below) the x-intercept.

Press: **ENTER**

Right Bound? Press **▶** until cursor is just right of (and above) the x-intercept.

Press: **ENTER**

Guess? **ENTER**

ROOT $X=1.5$ $Y=0$

2 COMPLEX NUMBERS

Solve: $(10 + 2i) + (8 - 4i)$

Type: $(10 + 2i) + (8 - 4i)$ The i is located at **2nd** **.** **i**

Answer: $18 - 2i$

3 LOGARITHMS

Solve: $\log 100$

Press: **LOG** **100** **ENTER**

Answer: 2

Solve: $\text{antilog}(2)$

Press: **2nd** **10^x** **LOG**

Gives: 10^2

Type: **2** **ENTER**

Answer: 100

Solve: $\ln 4$

Press: **LN** **4** **ENTER**

Answer: 1.386294

Solve: $e^{1.38629}$

Press: **2nd** **e^x** **LN**

Gives: e^2

Press: **2nd** **ANS** **(-)** **ENTER**

Answer: 4

4 GRAPHING CIRCLES

Graph: $X^2 + Y^2 = 100$

Solve for Y:
 $Y = (-X^2 + 100)^{(1/2)}$
 $Y = -(-X^2 + 100)^{(1/2)}$

Press: **Y=** **CLEAR**

$\{Y1=$ **$(-X^2 + 100)^{(1/2)}$** **ENTER**

$\{Y2=$ **$-(-X^2 + 100)^{(1/2)}$** **ZOOM** **6** ZStandard

Press: **ZOOM** **5** ZSquare

Press: **2nd** **WIND**

WINDOW

Xmin	=	-15.161
Xmax	=	15.161
Xscl	=	1
Ymin	=	-10
Ymax	=	10
Yscl	=	1
Xres	=	1

5 SOLVING SIMULTANEOUS EQUATIONS BY GRAPHING

Solve: $2X - 2Y = 8$
 $4X - 6Y = 14$

Change to:
 $Y = X - 4$
 $Y = (2/3)X - (7/3)$

Press: **Y=** **CLEAR**

$\{Y1=$ **$X - 4$** **ENTER** **CLEAR**

$\{Y2=$ **$(2/3)X - (7/3)$** **ZOOM** **6** ZStandard

2nd **CALC** **TRACE** **5** intersect

First curve? **ENTER**

Second curve? **ENTER**

Guess? **ENTER**

Intersection **X=5** **Y=1**

6 SOLVING SIMULTANEOUS EQUATIONS USING MATRICES

Solve: $2X - 2Y = 8$
 $4X - 6Y = 14$

Press: **2nd** **MATRIX** **x⁻¹** **▶** (twice) **ENTER**

MATRIX:A **2** **ENTER** **3** **ENTER**

[**2** **ENTER** **-2** **ENTER** **8** **ENTER**

[**4** **ENTER** **-6** **ENTER** **14** **ENTER**

Press: **2nd** **QUIT** **MODE**

Press: **2nd** **MATRIX** **x⁻¹** **▶** **ALPHA** **APPS** **B**

Gives: rref(

Press: **2nd** **MATRIX** **x⁻¹** **ENTER**

Gives: rref([A]

Press: **ENTER**

Answer: $\begin{bmatrix} 1 & 0 & 5 \\ 0 & 1 & 1 \end{bmatrix}$

Means: $X = 5$
 $Y = 1$

7 MATRIX MATH

$$B = \begin{bmatrix} & 1 & \\ & 2 & \\ & 3 & \end{bmatrix}$$

Press: **2nd** **MATRIX** x^{-1} (twice) **2**

MATRIX:B **3** **ENTER** **1** **ENTER**

[**1** **ENTER**

[**2** **ENTER**

[**3** **ENTER**

Press: **2nd** **QUIT** **MODE**

$$C = \begin{bmatrix} & 4 & 5 & 6 & \\ & & & & \end{bmatrix}$$

Press: **2nd** **MATRIX** x^{-1} (twice) **3**

MATRIX:C **1** **ENTER** **3** **ENTER**

[**4** **ENTER** **5** **ENTER** **6** **ENTER**

Press: **2nd** **QUIT** **MODE**

Solve: BC

Press: **2nd** **MATRIX** x^{-1} **2** **x**

2nd **MATRIX** x^{-1} **3**

Gives: [B] · [C]

Press: **ENTER**

Answer:
$$\begin{bmatrix} 4 & 5 & 6 \\ 8 & 10 & 12 \\ 12 & 15 & 18 \end{bmatrix}$$

8 DETERMINANTS

$$D = \begin{vmatrix} 8 & 9 \\ 10 & 11 \end{vmatrix}$$

Press: **2nd** **MATRIX** x^{-1} (twice) **4**

MATRIX:D **2** **ENTER** **2** **ENTER**

[**8** **ENTER** **9** **ENTER**

[**10** **ENTER** **11** **ENTER**

Press: **2nd** **QUIT** **MODE**

Press: **2nd** **MATRIX** x^{-1} **ENTER**

Press: **2nd** **MATRIX** x^{-1} **4** **ENTER**

Answer: -2

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CALCULATING LINEAR REGRESSION

Press: **STAT** **ENTER**

Move cursor up to 'L1'.

Press: **CLEAR** **ENTER**

Type: 1920 **ENTER**

Type: 1950 **ENTER**

Type: 1980 **ENTER**

Move cursor up to 'L2'.

Press: **CLEAR** **ENTER**

Type: 191.6 **ENTER**

Type: 195.4 **ENTER**

Type: 198.7 **ENTER**

Press: **2nd** **QUIT** **MODE**

Press: **STAT** **▶** **4**

Press: **2nd** **L1** **,** **2nd** **L2** **1**

Press: **,** **VARΣ** **▶** **ENTER** (twice)

Gives: LinReg(ax+b) L1, L2, Y1

Press: **ENTER**

LinReg
y=ax+b
a=.118333333
b=-35.5166666

Press: **Y=** This is the regression equation.

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PLOTING AND GRAPHING LINEAR REGRESSION

Press: **2nd** **STAT PLOT** **Y=** **ENTER** (selects Plot 1) **ENTER** (turns on Plot1)

Move cursor down to 'Type:'

Press: **ENTER** (to select scatterplot)

Move cursor down to 'Xlist:'

Press: **2nd** **L1** **1** (if it does not already say L1)

Move cursor down to 'Ylist:'

Press: **2nd** **L2** **2** (if it does not already say L2)

Press: **WINDOW**

WINDOW
Xmin = 1900
Xmax = 2000
Xscl = 1
Ymin = 190
Ymax = 200
Yscl = 1

Press: **GRAPH**

To turn of Plot 1

Press: **Y=** Move cursor down to 'Plot1'

Press:

ENTER

(to turn off Plot1)

(Plot1 can also be turned on and off this way)