Lottery Solver¹

How to use the TVM Solver on the Ti-83+ to find the best payoff for winning the lottery:

| 1. Press the blue APPS key. You should see Figure 1. | Figure 1 2:CBL/CE 3:Prob 9 4:SciToc 5:Stud90 | 00000 2e 3R 3im 31s 2rd |
|---|---|--|
|---|---|--|

| 2. Select 1: TVM Solver. See Figure 2 | Figure 2 Figure |
|--|--|
| 3. Key in data. N= 20 years; I% = 10% interest rate; PMT = 1000000; FV = 0; P/Y = 1 for 1 payment per year; C/Y = 1 for compounding periods; PMT = END because the payment is received at the end of the month. | N=20 Figure 3 I½=10 ■ PV= 8513563.7 PMT=1000000 FV=0 P/Y=1 C/Y=1 PMT: ■N BEGIN |
| 4. Key in data. | N=20 Figure 4 1%=5 ● PV=■12462210.34 PMT=1000000 FV=0 P/Y=1 C/Y=1 PMT:■NM BEGIN |

¹ This problem was taken from the Cartoon Introduction to Economics, Yoram Bauman and Grady Klein, pages 34 and 35, Hill and Wang, 2009.

How to Use an Excel Spreadsheet to Solve the Lottery Problem:

1. Open Excel and start a new book.

2. Enter the information in your spreadsheet. See Figure 1. Note that the interest rate is entered as **10**. This was not necessary as I could have entered .10.

| | A | В | |
|---|--------------------|--------|--|
| 1 | Interest Rate | 10 | |
| 2 | Yearly Payment | 100000 | |
| 3 | Number of Payments | 20.00 | |
| 4 | | | |
| 5 | | | |



| ect the n. Next find sent Value. ou might have ct a category. cegory to s Financial. l have to for PV. | Eile Edit View Insert Format Iools Data Window Help |
|--|---|
| | PWT 2 PPMT 2 IPMT IPMT NPV ISPMT PMT MEDIAN PV(rate,nper,pmt,fv,type) Returns the present value of an investment: the total amount that a series of future payments is worth now. |
| alog box will ope plug the number k "OK" and you e that the answer illion. | Function Arguments X PV Rate B1/100 S = 0.1 Nper B3 S = 20 Pmt B2 S = 100000 Fv S = number Type 0 S = 1 Returns the present value of an investment: the total amount that a series of future payments is worth now = -936492.0092 |
| winner should e money now at erest rate becau e giving up \$1.5 in consumption | a Se Formula result = (\$936,492.01) Help on this function OK Cancel |

Figure 2

3. Sele function PV, Pres Note yo to selec The cat select is You will search

4. A dia Simply in.

5. Click will see \$8.5 mi

6. The take the 10% inte they are million