Tute 1

"If you get a positive value times a number, You need to shift the decimal to the right as many times as the number specified - If negative move it to the right.

Simple interest formula = S=FV=P(1 plus IK)

Compound interest formula = Sk = P (1 plus i)^k

Sn = P (1 plus I/T)^n

where I is interest

T is frequency of compounding per year

K is number of years

N is total number of periods - K *T or T* K

Depreciation Formula = Vo or P = Inital value, Vk = P (1 - d)^k

Tute 4

1. Q = 24-3 p or p = 8 – Q/3
2. Q = 5p-8 or p = 1.6 + 0.2 Q

3, either 24-3 p = 5 p-8 and p = 4

or 8*Q/3 = 1.6 + 0.2 Q and Q = 12

4. TR = p · Q = 8 Q – Q2/3

MR = 8 – 2 Q/3

5. Max Π → MR = MC

8 – 2Q/3 = Q/3

Q = 8

P = 8 – 8/3 = 5.33

6. Impose p≤ 3 – instead of equilibrium price p = 4

Demand at p = 3 : QD = 24-3(3) = 15

Supply at p = 3 : QS = 5(3) -8 = 7

Excess demand = 15 – 7 = 8

7. AVC = 5 + 3 Q

TVC = (AVC) Q = 5 Q + 3 Q2

8. P = 18 – 3Q, MR = 18 – 6Q

18 – 6Q = 12, Q = 1, p = 15

Tute 2

1. 5 years 1 + r = (FV/PV)1/5

(i) r = 10.38%

(ii) r = 10.47%

(iii) r = 10.51%

(iv) r = 10.52%

(v) r = 10.52%

2. 1 + r = (1 + 0.06/12)8 · (1 + 0.072/12)4

1 + r = (1.005)8 · (1.006)4

1 + r = (1.0407) · (1.0242) = 1.06591

r = 6.59%

For an initial outlay of $1000 the net return is 1,000 (1.067) – 10 = 1,057.

Rate of return 5.7%

For larger outlays, e.g. 10,000. 10,000 (1.067) – 10 = 10,660.

Rate of return 6.6%

3. 2500 = 97 (1 + r)40 Take logs of both sides.

Ln(2500/97) = 40Ln(1 + r) , or 3.249335 = 40Ln(1 + r), or Ln(1+ r) = 0.0812334

Take the exponential of both sides: 1 + r = 1.084624 and r = 8.4624%

97 (1.0867)40 = 97 (27.822) = 2698.72

Either (i)The rate of return is less than the bond rate or (ii) the $97 would have grown to more than $2,500 hence the purchase wasn't a good investment.

4. (i) 10,000

(ii) 10,000 (1.08)-2 = 10,000 (0.8573) = 8573.39

(iii) 10,000 (1.08)-10 = 10,000 (0.4632) = 4631.93

5. (i) 1,050 (1.05)-1 = 1000

(ii) 1,108 (1.05)-2 = 1004.99 (*)

(iii) 1,160 (1.05)-3 = 1002.05

6. PV = 10,000 (1.07)-2 + 5,000 (1.07)-3 + 15,000 (1.07)-5

PV = 8,734.39 + 4,081.49 + 10,694.79

PV = 23,510.67

7. 100,000 (1 + i)16 = 125,000

Tute 2 (cont)

4

(1 + i)16 = 1.25 → 1 + i = (1.25) 1/16 = 1.014044

4 4

i = 0.0562 or 5.62%

OR use logarithms

Ln[(1 + i/4)16] = Ln 1.25 and 16Ln(1 + i/4) = 0.22314

Ln(1 + i/4) = 0.0139465 and 1 + i/4 = 1.014044.

8. 15,000 (1 + 0.055)12 k = 30,000

12

(1 + 0.055) 12 k = 2

12

12 k Ln (1 + 0.055) = Ln 2

12

12 k 0.0045728 = 0.69315

k = 12.63 years. About 12 years and 7½ months.

Tute 3

1. Add up PV to get NPV

i = 6% A B

-14,000

9.905.66

5,339.98

1,091.51 -15,000

943.40

5,161.98

11,754,67

NVP (6%): 2,337.14 2,860.05 (*)

i = 9% A B

-14,000

9,633.03

5,050.08

1,003.84 -15,000

917.43

4,881.74

10,810.57

NVP (9%): 1,686.95 (*) 1,609.74

Tute 3 (cont)

2. Find i such that NVP (i) = 0
NVP (10%) = -15,000 + 909.09 + 4,793.39 + 10,518.41
NVP (10%) = 1,220.89 > 0
NVP (12%) = -15,000 + 892.86 + 4,623.72 + 9,964.92
NVP (12%) = 481.51 > 0
NVP (13%) = -15,000 + 884.96 + 4,542.25 + 9,702.70
NVP (13%) = 129.91 > 0
NVP (14%) = -15,000 + 877.19 + 4,462.91 + 9,449.60
NVP (14%) = -210.29 < 0
Say i is approximately i = 13.38%
3. PV = 150 [1 – (1 + 0.052 / 52)-156]
0.052/52
PV = 150 [1-0.8556] = 21,656.12
0.001
4. FV = 150 [(1.001)156 - 1]
0.001
FV = 150 [1.16873 - 1] = 25,310.26
0.001
FV = PV (1.001)156
25,310.26 = 21,656.12 (1.16873) = 25,310.27
Almost perfect match.
5. (a) R = 120,000 (0.05/12) = 500
[1 – (1 + 0.05)-120] [1 – 0.60716]
12
R = 1272.79
(b) Outstanding Balance: B = 1272.79 [1 – (1 + 0.05) -96]/(
0.05/12)
12
B = 1272.79 [1-0.6709] = 100,536.97
0.05/12
(c) New R = 100,536.97 (0.09/12)
[1 – (1 + 0.09) -96]
12
New R = 100,536.97 (0.0075) = 1472.89
[1 – 0.48806]