LOS (m)

AM vs GM

while computing average return.

1) Calculation of AM vs GM.

Ex. consider the returns, 14%, 16% 20%, -10%, 40%, 130%

$$AM = \frac{14+16+20-10+40+130}{6} \Rightarrow 35\%$$

$$GM = \left[(1+r_1)(1+r_2)\ldots\ldots\ldots(1+r_n)\right]^{1/n} - 1$$

$$= \left[(1.14)(1.16)(1.2)(0.9)(1.4)(2.3)\right]^{1/6} - 1$$

$$= 28.95\%$$

Explaination :-

$(1.14)(1.16)(1.2)(0.9)(1.4)(2.3) = 4.59877$ STO -1 (same.)

RCL -1 y^x $(1 \div 6) = [\times\times\times - 1] \times 100 = \times\times\times$

$= 28.95$

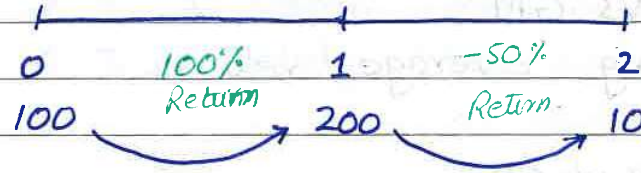
as compound interest formula is

$$FV = PV(1+r)^n$$

So, $(1.2895)^6$

4.59877 same

It means 28.95% is a true return.



we invest 100 and after 1 year PM makes it 200 and 2nd year he made it 100 again. In this case;

$$AM = \frac{100 - 50}{2} = 25\%$$

$$GM = [(2.0)(0.5)]^{1/2} - 1$$

$$= 0\%$$

Hence proved that GM gives the true calculation of return.

To make factor

$$1 + \frac{r}{100}$$

i) $= 1 + \frac{100}{100} \Rightarrow 1 + 1 = 2$

ii) $= 1 + \frac{-50}{100} \Rightarrow 1 - \frac{50}{100} \Rightarrow 1 - 0.5 \Rightarrow 0.5$

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2 Based on the calculation above –

Q1 → what is the relation b/w AM and GM

Ans → GM ≤ AM

Q-2 → GM whould be how much less than AM?

Ans → Dialogue "Volatality ① erodes returns" – this means if that data is highly volatile – that is dispersed, GM will be significantly lower than AM

Q-3 → what should be used as avg. return?

Ans. Case 1:-

When calculating average return of the past for performance apprasal – use GM

Case 2:

When investing for multiple perids in the future – use GM

Case 3:

When investing for single period in the future – use AM

Home work Q → 15, 16, 23, 138, 139