

The maximum cost of installation of zone heating which would make installation economic is that amount on which the savings would equal the interest

i.e. for installation to be economic in the least, annual savings = annual rate of interest \times capital sum

$$£88.116 = 0.03 \times \text{capital sum}$$

$$\text{capital sum} = \frac{£88.116}{0.03} = £2937.2 \approx £2937$$

1/1 slightly out, due to rounding error

In calculations use your most

vi) If the cost of installation of zone heating is less than £2937, installation would produce net savings; if the cost is more than this, the costs would outweigh the savings, and if the cost is close to £2937, the case for installation is marginal

vii) I would change the assumption that the annual rate of interest does not change from year to year. In the past ten years in Britain interest rates have varied between 6-14% (I believe), though real interest rates have varied by less than this, because interest rates and inflation tend to move together (I presume the 3% in the question is the real rate of interest - interest rates less inflation). If (real) interest rates were two per cent the capital sum in part (v) would be

$$£88.116 = £4405.8 \text{ (50\% more than in (v))}$$

0.02

If the (real) rate of interest were 4%, the capital sum in part (v) would be

$$£88.116 = £2202.9 \text{ (25\% less than in (v))}$$

0.04

So you see, changes in interest rates, which happen quite often, produce large changes in our sums.

Good - what you have done here is looked at the underlying assumptions, behind the model. This is what you (you will in TMA 07) do to get a Revised Model. In this case you would build "i" as a function (linear) into the model.