E355 Engineering Economics Spring 2022
Classroom Assignment #6

"I pledge my honor that I have abided by the Stevens Honor System"

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1. The following data represents a defender. Given this data, what is the correct replacement analysis technique to compare this asset against a challenger? How do we know? [1 point]

Year	BTCF (Marginal Cost)
1	$3,800.00
2	$2,700.00
3	$2,200.00
4	$4,100.00

We are given a four year lifetime summarization with the defender's marginal cost data for each year. As per the Replacement Method Decision Map, we see that the annual marginal cost is not **strictly** increasing. Thus, in order to compare the defender against a challenger, we need to use technique 2, where we find the lowest EUAC for the Defender, and compare it to the Challenger's minimum EUAC. If the Defender's minimum EUAC is lower than the Challenger's minimum EUAC, it should be kept for at least the minimum cost life.

2. The first cost of a machine is $60,000. The machine's end of year salvage value over the next five years are $53k, $45k, $38k, $32k, and $24k. The interest rate is 10%. Fill in the table and state the machine's economic life. [5 points]

Year	Cost	Loss in Market Value	Interest (10%)	Total Marginal Cost
0	$60,000.00	-	-	-
1	$53,000.00	60000-53000 = **$7,000**	$6,000	7000+6000 = **$13,000**
2	$45,000.00	53000-45000 = **$8,000**	$5,300	8000+5300 = **$13,300**
3	$38,000.00	45000-38000 = **$7,000**	$4,500	7000+4500 = **$11,500**
4	$32,000.00	38000-32000 = **$6,000**	$3,800	6000+3800 = **$9,800**
5	$24,000.00	32000-24000 = **$8,000**	$3,200	8000+3200 = **$11,200**

The economic life of the machine is at the end of 4 years, at the inflection point of the total marginal cost.