Introduction to Mathematics

Applications of Linear Functions

Learning Outcomes

After completion you will be able

- Discuss Depreciation and Straight Line Depreciation Method.
- Illustrate the applications of Straight Line Depreciation .

Important Terms

- **Appreciation:** When the value of something increases over time. The value of a house usually increases with time. Therefore its value is said to appreciate.

- **Depreciation:** The monetary value of an asset decreases over time due to use, wear and tear or obsolescence. This decrease is measured as depreciation.

    - **Straight Line Depreciation:** The rate of depreciation is constant.

Straight Line Depreciation

Example: *The truck of cost $20,000 is resold for $2500 at the end of 05 years. Calculate the annual depreciation.*

Solution:

Annual Depreciation = (Purchase Cost – Salvage Value) / Useful Life (in years)

Annual Depreciation = (20,000 – 2,500) / 05

Annual Depreciation = $3,500

Straight Line Depreciation

Example: *A piece of machinery is purchased for $300,000. Accountants have decided to use a straight line depreciation method with the machine being fully depreciated after 8 years. Letting V equal the book value of the machines and t the age of the machine, determine the function V= f(t). Assume there is no salvage value.*

Solution:

Annual Depreciation = (Purchase Cost – Salvage Value) / Useful Life (in years)

Annual Depreciation = (300,000) / 8

Annual Depreciation = $37,500

Now, using the concept of slope in the function V= f(t).

$$V = 300{,}000 - 37{,}500t$$

Straight Line Depreciation

Example: *A company purchases cars for use by its executives. The purchase cost for this year is $25000. The cars are kept for 03 years, after which they are expected to have a resale value of $5,600. If accountants uses the straight line depreciation method. Determine the function which describes the book value V as a function of the age of car.*

Solution:

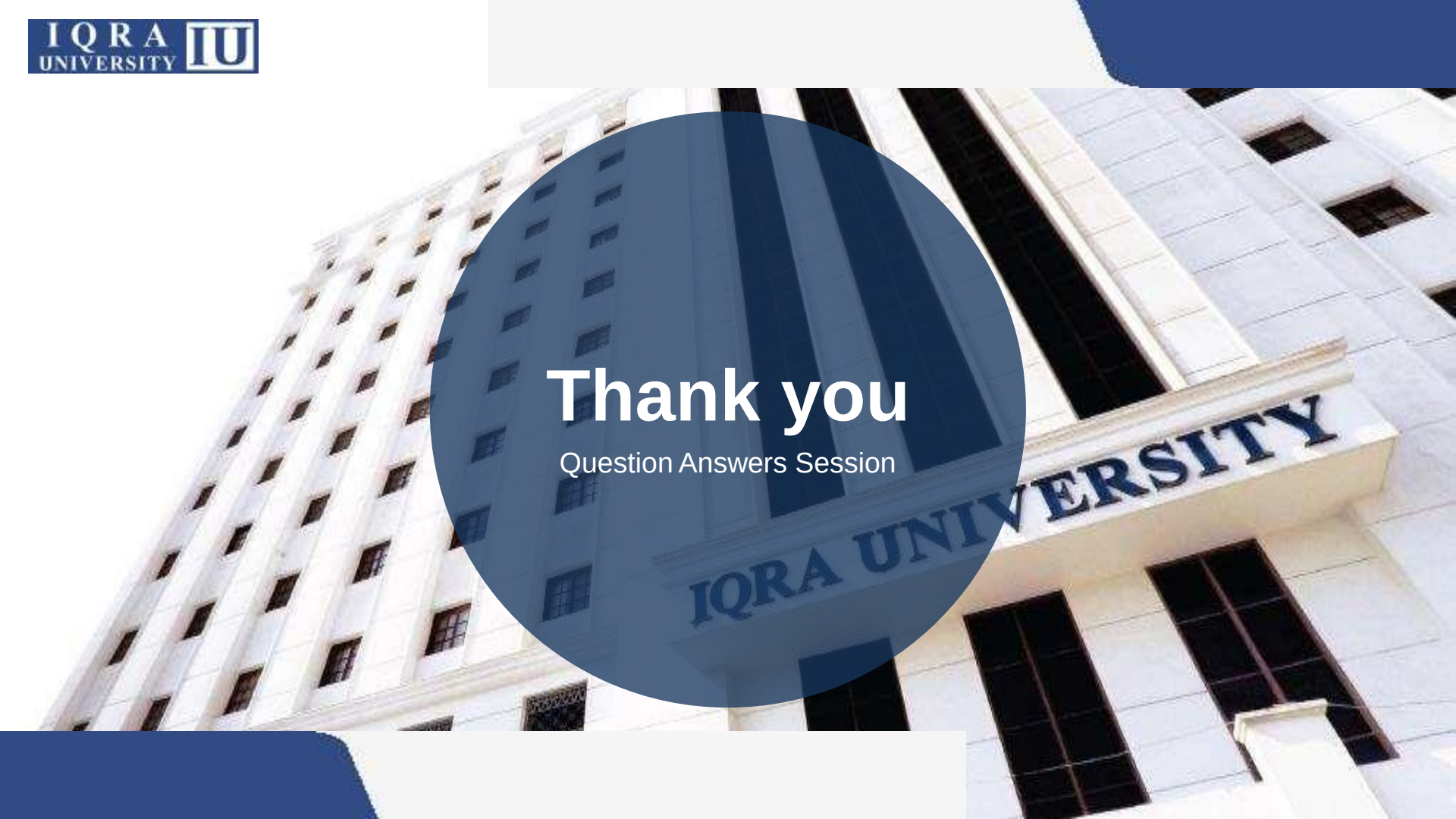
Annual Depreciation = (Purchase Cost – Salvage Value) / Useful Life (in years)
Annual Depreciation = (25,000 – 5,600) / 3
Annual Depreciation = $6,466.66

Now, using the concept of slope in the function $V = f(t)$.

$$V = 25{,}000 - 6{,}466.66\,t$$

YouTube Links

https://www.youtube.com/watch?v=QVn7IK5WeFc&t=109s
https://www.youtube.com/watch?v=6Fid1tZtClU



Thank you

Question Answers Session