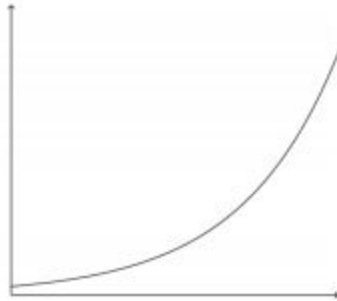


UNIT 8 Project (40 pts)

Demonstrate your knowledge by giving clear, concise solutions to each problem. Be sure to include all relevant drawings and justify your answers (show all your work). You may show your solution in more than one way to investigate beyond the requirements of the problem.

1. Describe two real-life situations that could be represented by the graph below (5 pts)



2. A. A penny is 1.55 mm thick. About how many pennies can you stack on top of each other in order to get one meter? Round to the nearest hundredth.(Hint: There are 1000 mm in a meter). (5 pts)
- B. Imagine that you stack pennies on top of each other every day. Each day, you double the amount of pennies in the stack. This means that on day 0, there is 1 penny. On day 1, there are 2 pennies. On day 2, there are 4 pennies, etc. What exponential function is being modeled here? (5 pts)
- C. If this pattern continues, in how many days will the stack of pennies be about 1 meter tall? (5 pts)
- D. The distance from the earth to the moon is 405,696,000 meters. About how many stacked pennies would it take to reach the moon? Round to the nearest hundredth. (5 pts)
- E. After about how many days will the stack of pennies be tall enough to reach the moon? (5 pts)
3. Solve  $8\sqrt{4z^2 - 43} = 40$  Justify each step in your solution. (10 pts)