

Use a GUESS sheet to complete the problems.

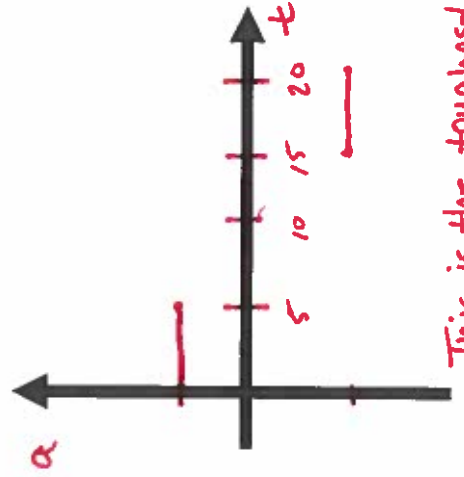
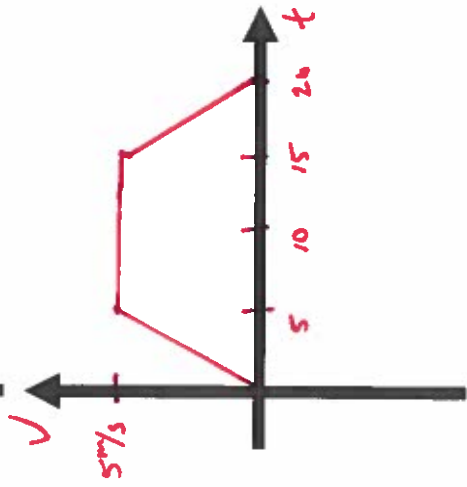
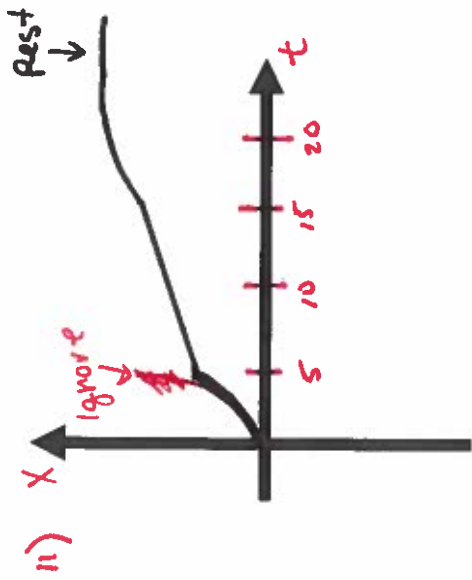
- While traveling along a highway a driver slows from 24 m/s to 15 m/s in 12 seconds. What is the automobile's acceleration? -0.75 m/s^2
- A parachute on a racing dragster opens and changes the speed of the car from 85 m/s to 45 m/s in a period of 4.5 seconds. What is the acceleration of the dragster? -8.89 m/s^2
- The table below includes data for a ball rolling down a hill. Fill in the missing data values in the table and determine the acceleration of the rolling ball. $a = 1.5 \text{ m/s}^2$

| Time (seconds) | Speed (km/h) |
|----------------|-----------------|
| 0 (start) | 0 (start) v_i |
| 2 | 3 |
| 4 | 6 |
| 6 | 9 |
| 8 | 12 |
| 10 | 15 v_f |

- A car traveling at a speed of 30.0 m/s encounters an emergency and comes to a complete stop. How much time will it take for the car to stop if its acceleration is -4.0 m/s^2 ? $t = 7.5 \text{ s}$
- If a car can go from 0 to 60 mi/hr in 8.0 seconds, what would be its final speed (in mi/h) after 5.0 seconds if its starting speed were 50 mi/hr? $87.5 \frac{\text{mi}}{\text{h}}$
- A cart rolling down an incline for 5.0 seconds has an acceleration of 4.0 m/s^2 . If the cart has a beginning speed of 2.0 m/s, what is its final speed? 22 m/s
- A helicopter's speed increases from 25 m/s to 60 m/s in 5 seconds. What is the acceleration of this helicopter? 7 m/s^2
- * As she climbs a hill, a cyclist slows down from 25 mi/hr to 6 mi/hr in 10 seconds. What is her acceleration? -1.9 mi/h/s OR -0.85 m/s^2
- A motorcycle traveling at 25 m/s accelerates at a rate of 7.0 m/s^2 for 6.0 seconds. What is the final speed of the motorcycle? 67 m/s • (That's 150 $\frac{\text{mi}}{\text{h}}$... woah!)
- A car starting from rest accelerates at a rate of 8.0 m/s^2 . What is its final speed at the end of 4.0 seconds? 32 m/s

Sketch the position vs time, velocity vs time, and acceleration vs time graphs for each scenario.

- An elevator starts from rest, then begins moving upward, gaining speed until it reaches 5 m/s after 5 seconds has elapsed. The elevator continues at this speed for 10 seconds, then comes to rest over a period of 5 seconds.
- A child is pushing a toy car. While pushing, the car goes from rest to a speed of 2 m/s over .50 seconds. The child then lets go, and the car continues moving at a constant speed for the next 5 seconds.
- A rock is dropped inside a vacuum chamber (no air molecules), and falls. It after 1 second of falling, it has a velocity of -10 m/s.



This is the toughest \rightarrow 3
 one! Break it into parts!

