1. **How do u generate a square wave?** - On servofrontend, input -> square
2. **How do u generate a sawtooth wave?** - Create a .m file for the sawtooth data and add it as an input file on servofrontend
3. **When generating the sawtooth, what TYPE of file is it?** - ASCII format
4. **Why sawtooth and not ramp?** - Because of the non-linear effects of the servo, there’s a different initial servo response. So, we should not take the first pulse cycle as it does not represent how the servo works. Also, because of the friction coefficient.
5. **What change did you see when you used the PID?** - PO decreases, settling time decreases. Output was better at tracking the input.
6. **What is the servo?** - It is a rotational positioning REAL-LIFE system that has non-linear properties like dead-zone, saturation, gear-lash and stiction. It’s an induction machine.
7. ➔ For gear-lash, there’s an airgap in the servo that causes non-linearity.
8. ➔ Stiction is the resistance to the starting of the motor. Servo is a DC motor.
9. **What is saturation?** - When you increase the amplitude, the percent overshoot increases. There are “camel humps”. Due to the limited linear range of the D/A converter, saturation occurs.
10. **What is Anti-windup?** - When there is the integral windup effect, percent overshoot increases. To remedy this, the Anti-windup is used.
11. **How do u find Trise?** - 10% -90% of the yss.
12. **What causes the Anti-windup?** - It temporarily switches off the integral, so u see it track properly; it is better than PID. With the integral muted, it basically acts like a PD (overshoot gone) temporarily.
13. **What is the system type?** - Type 1 because of the integral.
14. **What are you looking for when amplitude is 300 degrees and 20 degrees?** - For 300 degrees, it’s saturation. - For 20, it’s deadzone.
15. **Why did you use 50 degrees? Why not 300 degrees?** - Because of nominal range
16. **What do you see in the graph at saturation?** - “camel humps” and then it dies out. It’s a triangular shape, too. LMAO.
17. **What do you see in the graph at deadzone?** - There’s a delay and the output will try to track the input but it will “flat” out. It’ll die. However, because of the integral, it is expected to track well.
18. **Why is there no steady state error in the servo?** - Because the servo is an integrator.