Angular Acceleration of Rotating Phone

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Oather Strawderman

Angular Acceleration of Rotating Phone Lab

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Angular Acceleration of Rotating Phone Lab

- Put your phone on top of a fidget spinner
- Start the stopwatch on the phone and spin the phone
- Video the phone spinning with another phone until it stops
- Record the time when the phone is orientated upright
- Record the time after one rotation
- Calculate average angular velocity which is equal to the instantaneous angular velocity at the middle of those two times
- Repeat this calculation several times
- Plot instantaneous angular velocity vs time;
  the slope is the angular acceleration

Angular Acceleration of Rotating Phone Lab

Initial Time (s)	Time after 1 rotation (s)	Middle Time (s)	ω=2π/(Δt) (rad/s)
1.92	3.21	2.565	4.87
3.21	4.76	3.985	4.05
4.76	6.76	5.76	3.14
6.76	9.93	8.35	1.21

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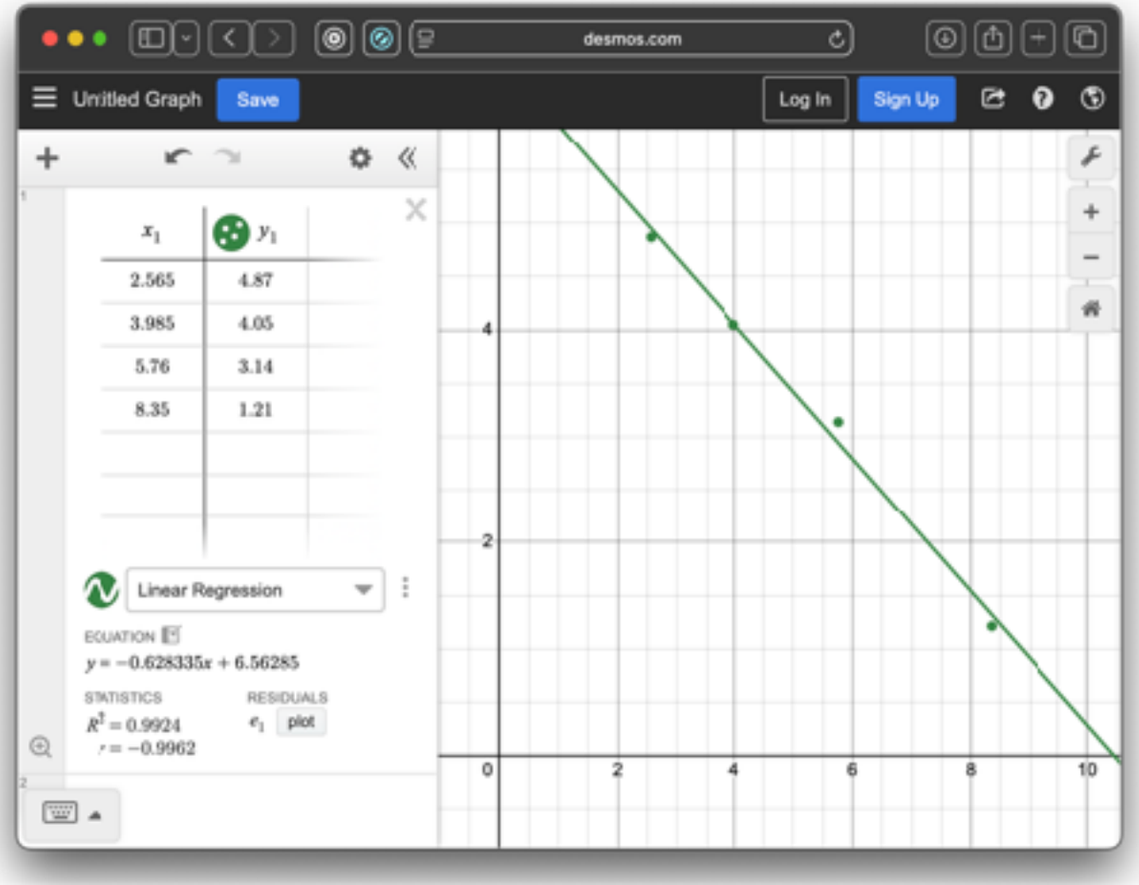
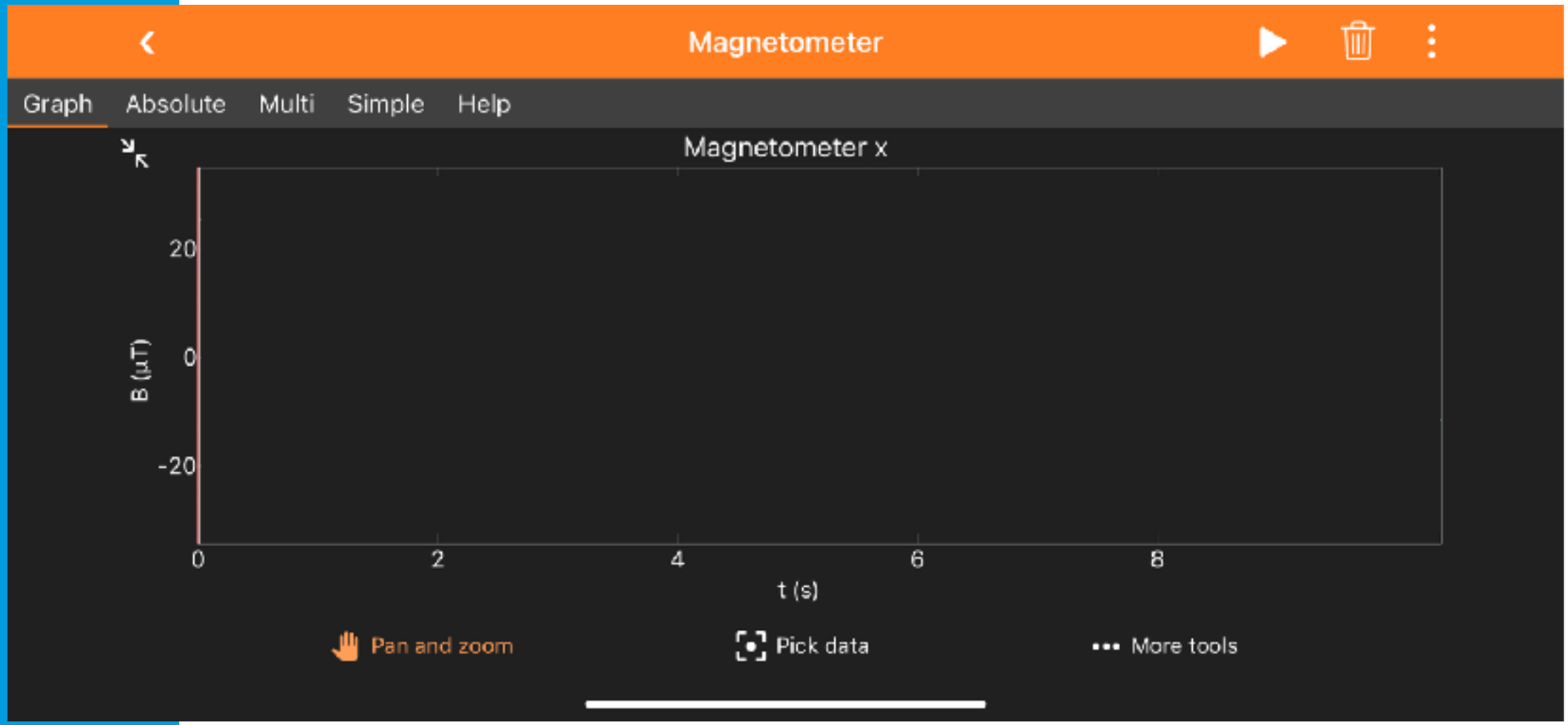


Angular Acceleration of Rotating Phone Lab

- Use PhyPhox app on a smart phone or tablet
- Put your phone on top of a fidget spinner
- Open up the Magnetometer in PhyPhox
- Select the x graph and hit play
- Spin the phone and record until the phone stops spinning
- Record the time at the top of a peek
- Record the time at the next peek
- Calculate average angular velocity which is equal to the instantaneous angular velocity at the middle of those two times
- Repeat this calculation several times
- Plot instantaneous angular velocity vs time and the slope is the angular acceleration

Angular Acceleration of Rotating Phone Lab



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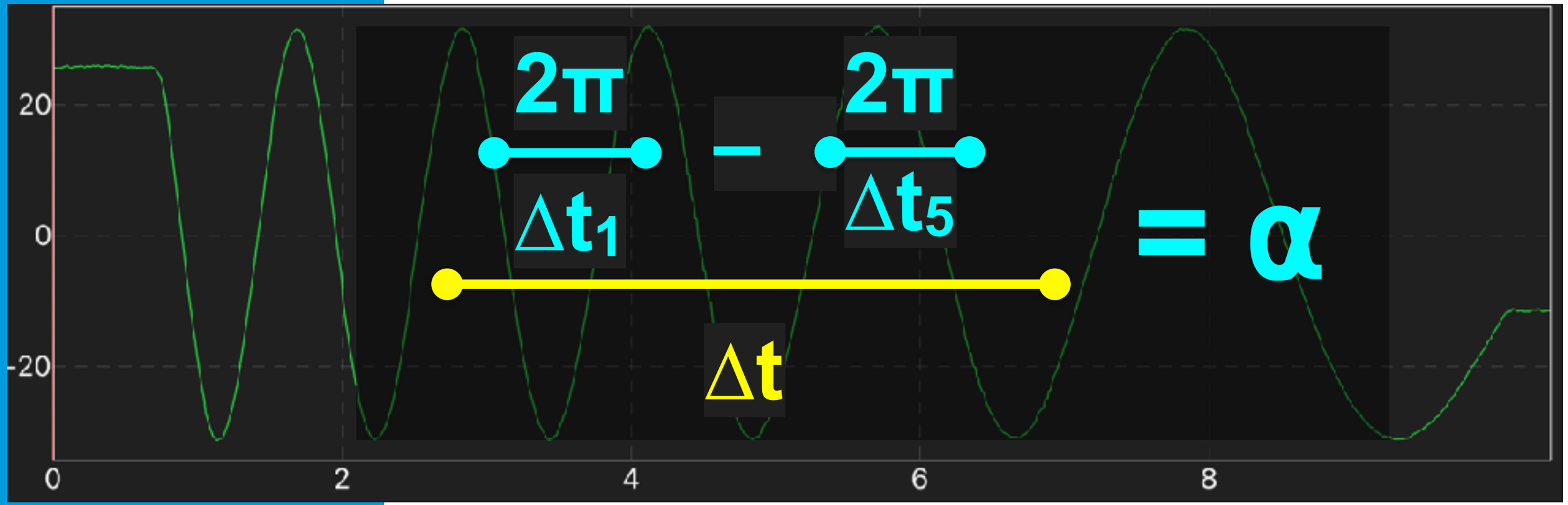

Angular Acceleration of Rotating Phone Lab

- Use PhyPhox app on a smart phone or tablet
- Put your phone on top of a fidget spinner
- Open up the Gyroscope in PhyPhox and select z graph
- Hit play
- Spin the phone
- Once the phone stops spinning stop PhyPhox
- Select Pick Data
- Tap and drag along the line to determine angular acceleration

Thank you!!

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