```
//requires a 10k and 30k ohm voltage divider.
//capacitor is .1uF
// arduino is connected via 220 ohm resistor to limit current while discharging capacitor
//the voltage output was off, but i believe the equation is right, so i modeled voltage out versus the
actual voltage in
// and it was a linear y=mx+b relationship.
// this may be due to resistor tolerances, but it could also be some other things.
//If you need this program for accurate measurements

 double arduinoVoltage = 4.94;

 int digitalPin = 12;


void setup() {

  Serial.begin(9600);
  delay(100);
  Serial.print("on");

}

void loop() {

  Serial.print("voltage: ");
  Serial.print(measureVolts(digitalPin));
  Serial.println("v");


}

double measureVolts(int pinNum){ //pinNum is the digital i/o pin

 double timeStart = 0;
 double timeEnd = 0;
 double timeMicroSec = 0;


  timeMicroSec = 0;
  pinMode(digitalPin, OUTPUT);
  digitalWrite(digitalPin,LOW);
  delay(2); //discharge the cap

  pinMode(digitalPin,INPUT);

                                                //  analogValuePrior = analogRead(Vpin);
  timeStart = micros();

   while(digitalRead(digitalPin) == LOW){}//wait for the pin to go HIGH

  timeEnd = micros();
                                                //  analogValueAfter = analogRead(Vpin);
  timeMicroSec = timeEnd - timeStart;

  return convertToVolts(timeMicroSec);
}


double convertToVolts(double timeMicroSec){

 double voltage = (2.5*pow(1.0013,timeMicroSec)/(pow(1.0013,timeMicroSec)-1))*4.0;
 return voltage;

 //return (voltage + 4.744)/1.412;//this is the linear function fit. You shouldn't need this and if you
do, it will be different
}
```