Your final project will be to create a program for the 3Pi to perform a number of line following tasks. You may not program the robot between tasks but are allowed to provide inputs to the robot before each task. All lines are dark on white background. "Smoothly" means with no noticeable errors or corrections.

in/ft=1/12，mm/m=1/1000 0.75in/ft=62.5mm/m
1 in=25.4mm
1 ft=0.3048m

1) Move forward until it acquires, centers itself on, and smoothly follow a straight, dark, **3/4 in(19.05)** wide solid black line at **half speed(1/2)**. The robot is to **turn around at the end of the line and repeat the course indefinitely.** The line will be at least **2 ft(0.6m)** long.

2) Smoothly follow a circular course of radius at least **3in(76.2mm)** (in either direction) at **quarter speed(1/4)** formed from a dark, unbroken, **3/4 in** wide black line.

3) Smoothly follow a square course (**speed not specified**) with sides at least 1 **ft(0.3mm)** in either direction. The square will be formed from a dark, unbroken, **3/4 in** wide black line.

Graduate Students: Your robot must be able to perform one of the following extra tasks:

1) Follow a **unbroken circuit** of arbitrary shape composed of a **3/4 inch** line with variable shading. The minimum radius of any curve will be **at least 2in**. The speed must be **at least 1/8 maximum speed**.

2) Follow a **broken circuit** of arbitrary shape and constant (dark) shading. Any break in the course will be in a region of constant curvature (e.g. a section of a curve or straight is removed).

You will be required to demonstrate your project. You may work alone or in pairs.