

Real Distance (cm)	Y (rows)	Pixel From Center (PFC)	Θ (rad)
50	188	44	0.0898
40	199	55	0.112
30	218	74	0.1489
20	255	111	0.2213

$$\theta_{real} = \arctan\left(\frac{h}{D_{real}}\right)$$

Compute **gain** and **offset**:

$$PFC * gain + offset = \Theta$$

$$44 * gain + offset = 0.0898$$

$$55 * gain + offset = 0.112$$

Where:

$$gain = 0.002$$

$$offset = 0.001$$

In the file **detect_fcn.m**, modify in last lines the **gain** and **offset** value:

```
h_cm=5;
gain=0.0020;
offset=0.001;
pfc=Y-144;
distance=round(h_cm/tan(pfc*gain + offset));
```