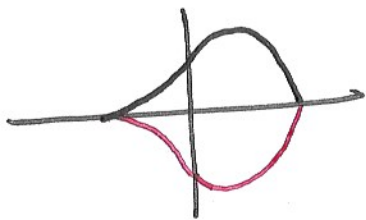


10.8 POLAR GRAPHS (SYMMETRY)

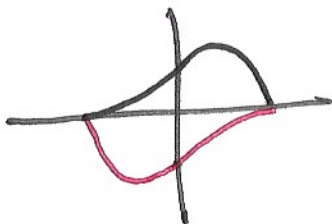
IF A GRAPH IS SYM OVER

WE ONLY NEED TO PLOT POINT
FOR θ IN

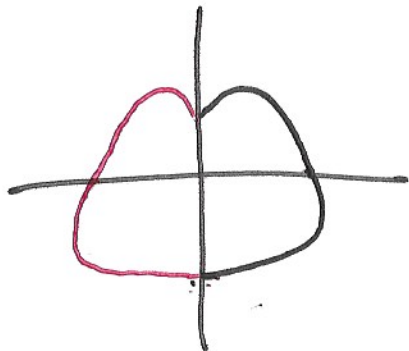
POLAR AXIS



POLE



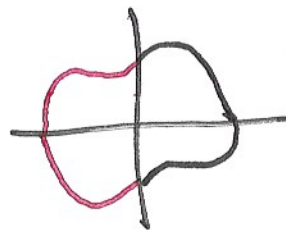
$$\theta = \frac{\pi}{2}$$



Q_1, Q_2

MINIMUM
INTERVAL
TO PLOT POINTS

$$\theta \in [0, \pi]$$



Q_1, Q_2

$$\theta \in [0, \pi]$$

OR

Q_1, Q_4

$$\theta \in [-\frac{\pi}{2}, \frac{\pi}{2}]$$

Q_1, Q_4

$$\theta \in [-\frac{\pi}{2}, \frac{\pi}{2}]$$

BACK TO $r = \sin \theta$

SYM TESTS POLAR AXIS $\rightarrow$ NO CONCLUSION

POLE $\rightarrow$ NO CONCLUSION

$\theta = \frac{\pi}{2}$ $\rightarrow$ SYM

SO WE NEED TO PLOT POINTS
FOR $\theta \in [-\frac{\pi}{2}, \frac{\pi}{2}]$

+ THEN REFLECT

THE CONCLUSION
OF OUR POLAR SYM
TESTS IS

~~NEVER~~

"NOT SYMMETRIC"