

SCORE: ___ / 20 POINTS

What day of the month is your birthday? _____

What are the last 2 digits of your address? _____

What are the last 2 digits of your zip code? _____

What are the last 2 digits of your social security number? _____

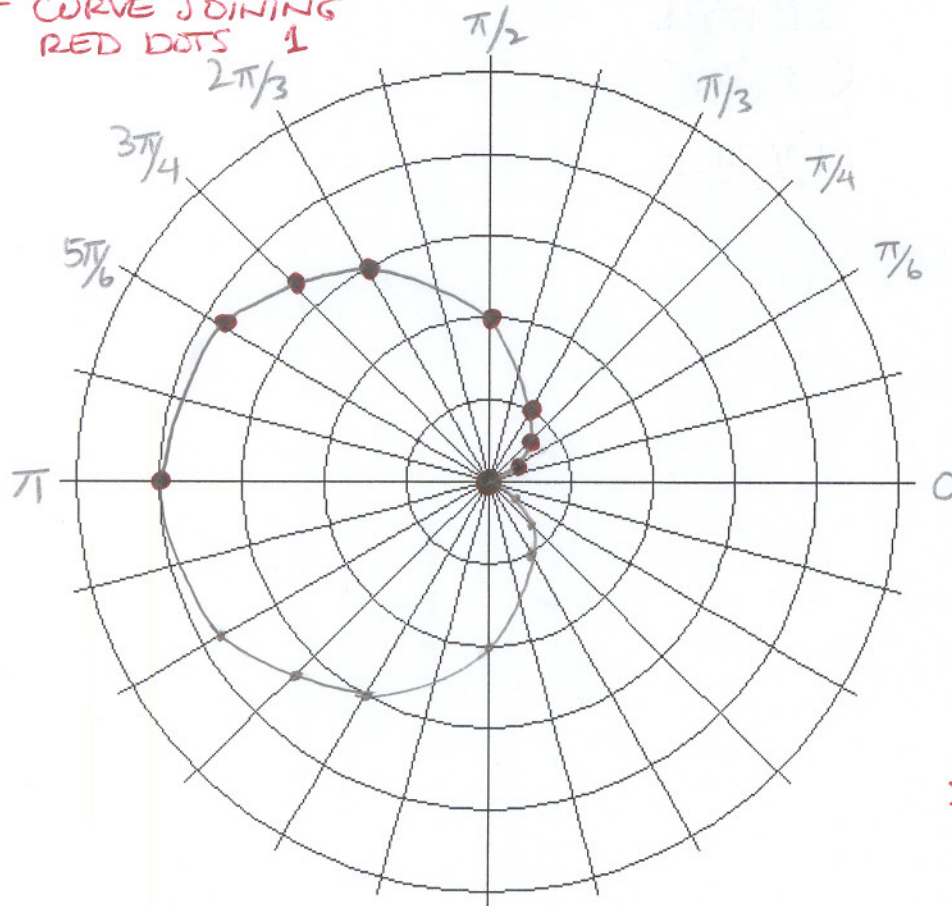
[IF YOU DO NOT HAVE A SOCIAL SECURITY NUMBER,
USE YOUR STUDENT ID NUMBER]**NO CALCULATORS ALLOWED**Draw the polar graph $r = 2 - 2\cos\theta$. You must run symmetry tests, and use the results to calculate the least number of points required.

- RED DOTS 2

- REFLECTION 2

- CURVE JOINING

RED DOTS 1



θ	r
0	0
$\pi/6$	0.2
$\pi/4$	0.6
$\pi/3$	1
$\pi/2$	2
$2\pi/3$	3
$3\pi/4$	3.4
$5\pi/6$	3.8
π	4

SUBTRACT $\frac{1}{2}$ POINT FOR
EACH UNNECESSARY θ, r
PAIRSYMMETRY $\theta = 0$ (AXIS)

① $r = 2 - 2\cos(-\theta)$

$r = 2 - 2\cos\theta$

SYMMETRIC

NEED $\theta \in [0, \pi]$ $\theta = \frac{\pi}{2}$

① $r = 2 - 2\cos(-\theta)$

$-r = 2 - 2\cos\theta$

$r = -2 + 2\cos\theta$

② $r = 2 - 2\cos(\pi - \theta)$

$r = 2 + 2\cos\theta$

NO CONCLUSION
ON BOTH TESTSPOLE

① $r = 2 - 2\cos\theta$

$r = -2 + 2\cos\theta$

② $r = 2 - 2\cos(\pi + \theta)$

$r = 2 + 2\cos\theta$

NO CONCLUSION
ON BOTH TESTS

SUBTRACT 1 POINT EACH TIME YOU WROTE "NOT SYMMETRIC"