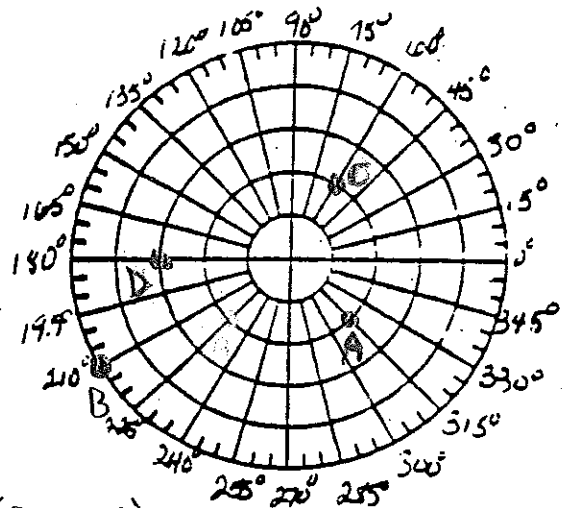


I. Graph each polar point on the graph and label the point with the correct letter.

1. A (2, -45°)
2. B (-5, $\frac{\pi}{6}$)
3. C (-2, -120°)
4. D (3, 180°)



II. State another polar coordinate for:

5. (3, -60°), where $r > 0$ and $\theta > 0$ (3, 300°)
6. (5, 270°), where $r < 0$ and $\theta > 0$ (-5, 90°)

III. Change each point to polar form: Round answers to the nearest thousandth.

$r = \sqrt{3^2 + 4^2} = 5$ 7. (-3, 4) = (5, 126.870°)

9. (0, -8) = (8, 270°)

$\theta = \tan^{-1}(\frac{4}{-3}) + 180^\circ =$
8. (-10, 0) = (10, 180°)

10. $(-6\sqrt{2}, 6) = (10.392, 125.264^\circ)$

$r = \sqrt{10^2 + 0^2} = 10$

$\theta = \tan^{-1}(\frac{0}{-10}) + 180 = 180$ IV. Change each point to its rectangular form

Round answers to the nearest thousandth.

$x = -2 \cos 90^\circ = 0$ 11. (-2, 90°) = (0, -2)

13. (4, 33°) = (3.355, 2.179)

$y = -2 \sin 90^\circ = -2$ 12. (4, -60°) = (2, -3.464)

14. (3, - π) = (-3, 0)

$x = 4 \cos(60^\circ) = 2$
 $y = 4 \sin(-60^\circ) = -3.464$

$r = \sqrt{(6\sqrt{2})^2 + 6^2} = \sqrt{108}$
 $\theta = \tan^{-1}(\frac{6}{-6\sqrt{2}}) + 180^\circ = 125.264^\circ$

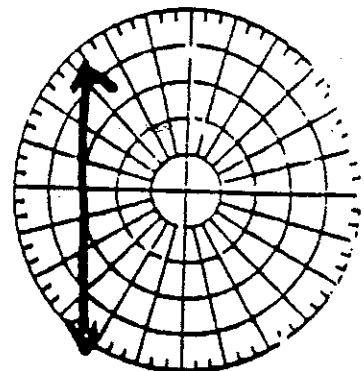
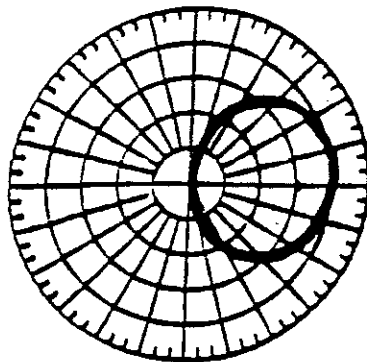
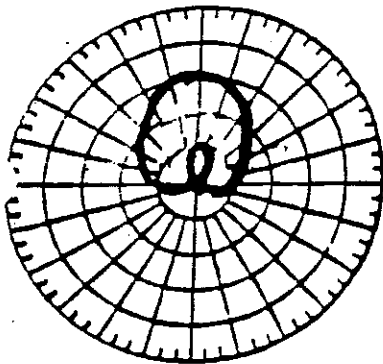
$x = 4 \cos 33^\circ$
 $y = 4 \sin 33^\circ$
 $x = 3 \cos(-\pi)$
 $y = 3 \sin(-\pi)$

VI. Write the equations for the following polar graphs.

15. $r = 1 + 2 \sin \theta$

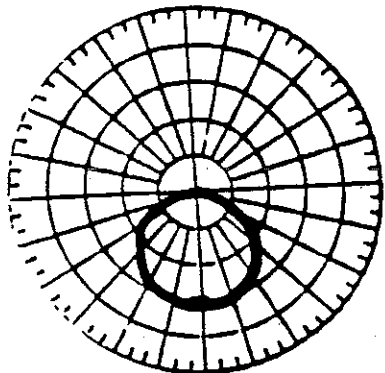
16. $r = 4 \cos \theta$

17. $r = \frac{-3}{\cos \theta}$



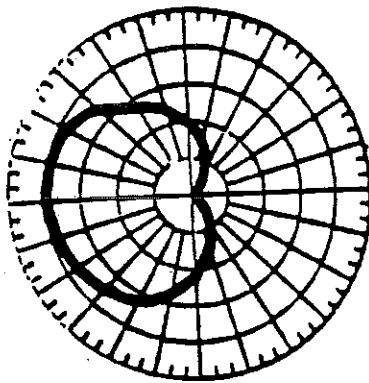
18.

$$r = -3 \sin \theta$$



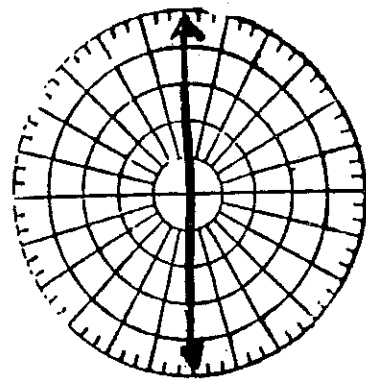
19.

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



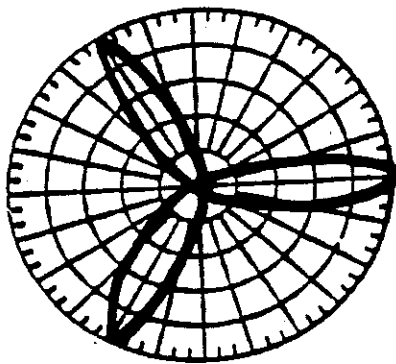
20.

$$\theta = 90^\circ$$



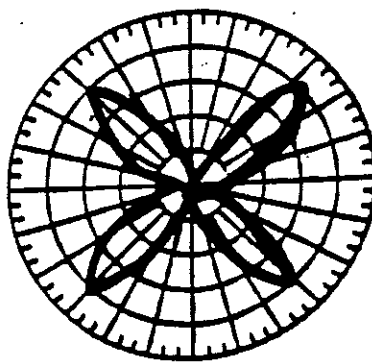
21.

$$r = 5 \cos(3\theta)$$



22.

$$r = 4 \sin(2\theta)$$



VII. 23. Convert $2x - 5y = 3$ to polar and solve for r .

(23)

$$2r \cos \theta - 5r \sin \theta = 3$$

$$r(2 \cos \theta - 5 \sin \theta) = 3$$

$$r = \frac{3}{2 \cos \theta - 5 \sin \theta}$$

24. Convert $r = 2 \cos \theta$ to rectangular

$$(24) r = 2 \cdot \frac{x}{r}$$

$$r^2 = 2x$$

$$x^2 + y^2 = 2x$$

(25)

$$r(3 - \cos \theta) = 3$$

$$3r - r \cos \theta = 3$$

$$3\sqrt{x^2 + y^2} - x = 3$$

VIII. Change to rectangular form:

$$25) r = \frac{3}{3 - \cos \theta}$$

$$26) r = \frac{3}{1 - 2 \cos \theta}$$

$$27) r = \frac{3}{3 - 3 \sin \theta}$$

$$(26) r(1 - 2 \cos \theta) = 3$$

$$r - 2r \cos \theta = 3$$

$$\sqrt{x^2 + y^2} - 2x = 3$$

$$(27) r(3 - 3 \sin \theta) = 3$$

$$3r - 3r \sin \theta = 3$$

$$r - r \sin \theta = 1$$

$$\sqrt{x^2 + y^2} - y = 1$$