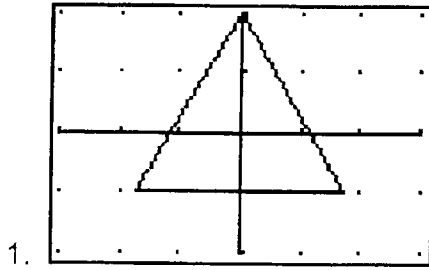


Name KEY

In parametric mode, give the settings needed to produce the following.



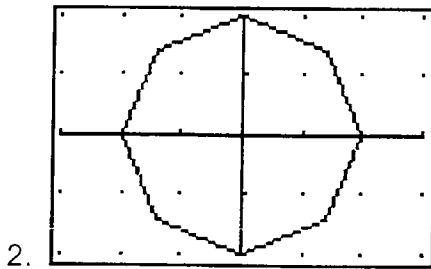
$$X_{1T} = 2 \cos(t)$$

$$Y_{1T} = 2 \sin(t)$$

$$T_{\min} = 90$$

$$T_{\max} = 450$$

$$T_{\text{step}} = 120$$



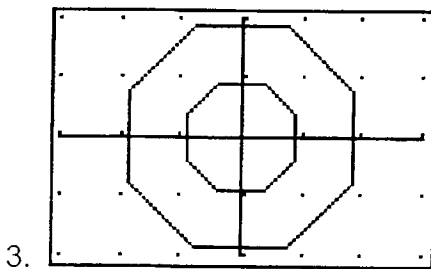
$$X_{1T} = 2 \cos(t)$$

$$Y_{1T} = 2 \sin(t)$$

$$T_{\min} = 0$$

$$T_{\max} = 360$$

$$T_{\text{step}} = 45$$



$$X_{1T} = 2 \cos(t)$$

$$Y_{1T} = 2 \sin(t)$$

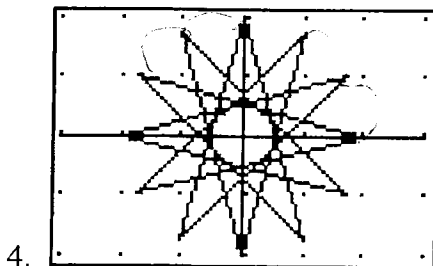
$$X_{2T} = \cos(t)$$

$$Y_{2T} = \sin(t)$$

$$T_{\min} = 22.5$$

$$T_{\max} = 392.5$$

$$T_{\text{step}} = 45$$



$$X_{1T} = 2 \cos(t)$$

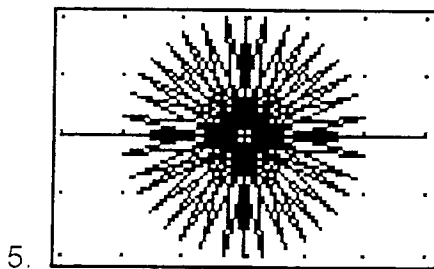
$$Y_{1T} = 2 \sin(t)$$

$$T_{\min} = 0$$

$$T_{\max} = 1800$$

$$T_{\text{step}} = 1800/12 = 150$$

12 POINTED STAR  
SPINS AROUND 5 TIMES  $360 \times 5 = 1800$



$$X_{1T} = 2 \cos(t)$$

$$Y_{1T} = 2 \sin(t)$$

$$T_{\min} = 0$$

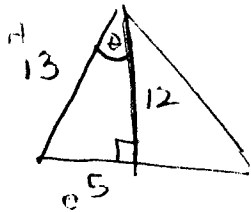
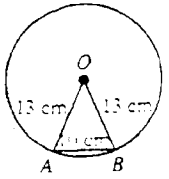
$$T_{\max} = 6120$$

$$T_{\text{step}} = \frac{6120}{36} = 170$$

36 MATH STAR

UHM CAN'T SEE HOW MANY TIMES, BUT 36 POINT  
STAR, BUT TOTAL DEGREES  $180(n-2) = 180(36-2)/360$   
 $= 180 \cdot 54 = 6120$

7. The radius of circle  $O$  is 13 cm and the length of  $\overline{AB}$  is 10 cm. Find the measure of  $\angle AOB$ .

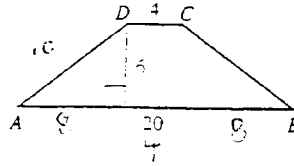


$$\sin \theta = \frac{5}{13}$$

$$\theta = \sin^{-1}\left(\frac{5}{13}\right) \approx 22.6199$$

$$2\theta = m\angle AOB \approx \boxed{45.24^\circ}$$

8. The height of an isosceles trapezoid is 6 units and the bases have 4 units and 20 units. Find the measures of the angles.



$$\tan(A) = \frac{6}{8}$$

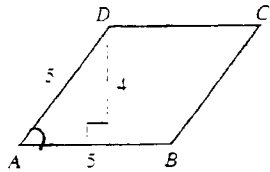
$$\angle A \approx \angle B \approx 36.87^\circ \text{ each}$$

$$\angle D \approx \angle C \approx 143.13^\circ \text{ each}$$

$$360 - 73.7398$$

$$\frac{286.26}{143.13}$$

9. A rhombus has sides 5 units long and its height is 4 units. Find its angles.



$$\sin(A) = \frac{4}{5}$$

$$A = \sin^{-1}\left(\frac{4}{5}\right)$$

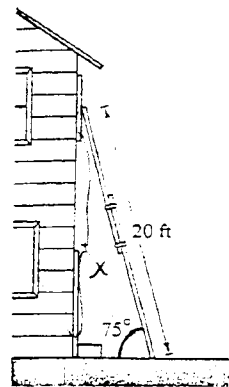
$$360 - 106.2690$$

$$\frac{253.74}{126.87}$$

$$m\angle A = m\angle C \approx 53.13^\circ$$

$$m\angle D = m\angle B \approx 126.87^\circ$$

10. Length A 20-foot ladder leaning against the side of a house makes a  $75^\circ$  angle with the ground (see figure). How far up the side of the house does the ladder reach?



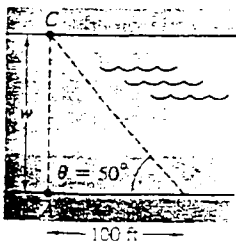
$$\sin 75 = \frac{x}{20}$$

$$20 \sin(75) = x$$

$$x \approx 19.3195$$

$$\boxed{19.3 \text{ ft}}$$

11. Width of a River A biologist wants to know the width  $w$  of a river in order to properly set instruments for studying the pollutants in the water. From point  $A$ , the biologist walks downstream 100 feet and sights to point  $C$ . From this sighting, it is determined that  $\theta = 50^\circ$  (see figure). How wide is the river?



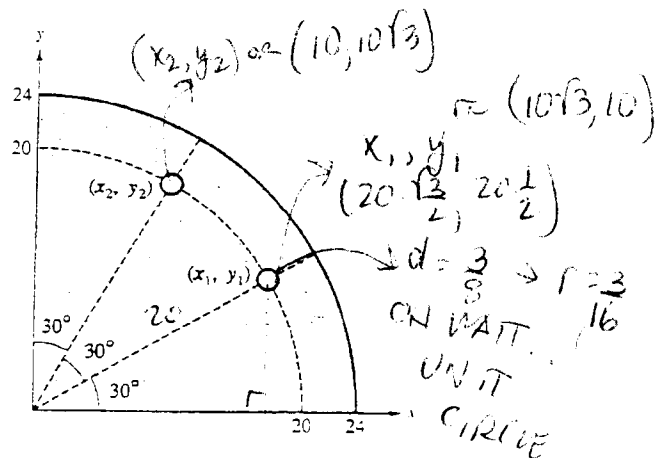
$$\boxed{119.18 \text{ ft}}$$

$$\tan(50^\circ) = \frac{w}{100}$$

$$100 \cdot \tan 50 = w$$

$$119.175 \approx w$$

12. Machine Shop Calculations A steel plate has the form of  $\frac{1}{2}$  of a circle with a radius of 24 inches. Two  $\frac{3}{8}$ -inch holes are to be drilled in the plate positioned as shown in the figure. Find the coordinates of the center of each hole.



$$(x_2, y_2) \approx (10, 10\sqrt{3})$$

$$\approx (10\sqrt{3}, 10)$$

$$(x_1, y_1) = \left(20 \cdot \frac{\sqrt{3}}{2}, 20 \cdot \frac{1}{2}\right)$$

$$d = \frac{3}{8} \rightarrow r = \frac{16}{3}$$

ON UNIT CIRCLE