

## 1.15 The Amazing Inverse Race

### *Practice*

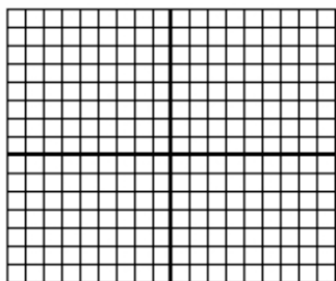
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#### I. Distance Formula

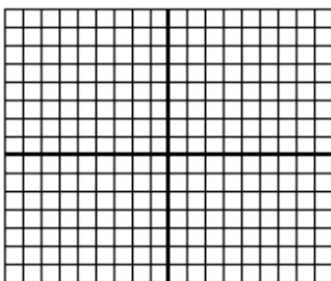
Find the distance from the origin  $(0, 0)$  to the given point in the rectangular plane.



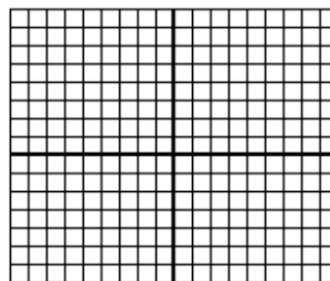
1.  $A(8, 6)$



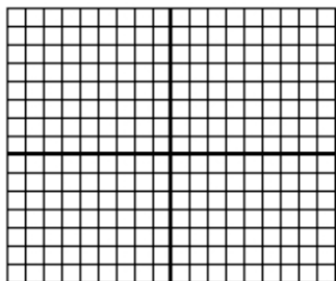
2.  $P(-5, -6)$



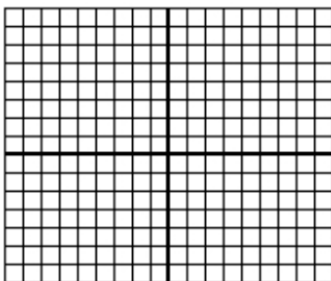
3.  $F(-7, 7)$



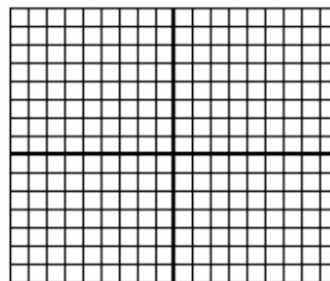
4.  $R(3, 44)$



5.  $G(\sqrt{3}, 1)$



6.  $Q(3, \sqrt{7})$



5. In each graph, the angle of rotation is indicated by an arc and  $\theta$ . Describe the angles of rotation from  $0$  to  $2\pi$  that make  $\tan \theta$  be positive and the angles of rotation that make  $\tan \theta$  be negative.

## II. Inverse Trig Functions

Use the given information to find the missing angle ( $0 \leq \theta \leq 2\pi$ ).

Round answers to thousandths place (3 decimal places).

7.  $\cos \theta = 0.9848$ ;  $\sin \theta > 0$

8.  $\sin \theta = 0.9925$ ;  $\tan \theta < 0$

9.  $\cos \theta = 0.0872$ ;  $\theta$  is in Quadrant IV

10.  $\tan \theta = 0.3839$ ;  $\cos \theta < 0$

11.  $\cos \theta = 0$ ;  $\sin \theta > 0$

12.  $\sin \theta = -0.1908$ ;  $\tan \theta > 0$

13.  $\tan \theta = -0.4663$ ;  $\sin \theta > 0$

14.  $\tan \theta = -0.4663$ ;  $\cos \theta > 0$

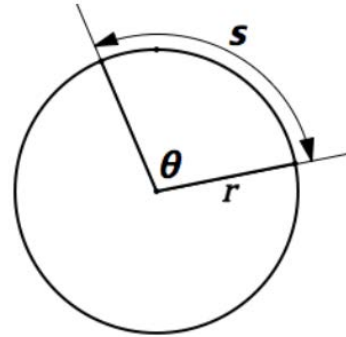
15.  $\tan \theta = -1$ ;  $\sin \theta > 0$

16.  $\sin \theta = -1$

17. Explain why #16 needed only 1 clue to determine a unique value for  $\theta$ , and #7 – 15 required at least 2 clues.

## II. Arc Length

Recall the formula for arc length:  $s = r\theta$ , where  $\theta$  is always in radians. Write your answers with  $\pi$  in it. Then use your calculator to find the approximate length of the arc to 2 decimal places



18. Find the length of an arc given that  $r = 10$  in and  $\theta = \frac{\pi}{4}$ .

19. Find the arc length given  $r = 4$  cm and  $\theta = \frac{5\pi}{6}$ .

20. Find the arc length given  $r = 72.0$  ft and  $\theta = \frac{\pi}{8}$ .

21. Find the arc length given  $r = 0.892$  mm. and  $\theta = \frac{11\pi}{10}$ .