

The sector of a circle shown to the left has its center at point O . The arc XYZ has length 10.8, and the central angle XOZ has measure 1.8 radians. What is the radius length, r , of the sector?

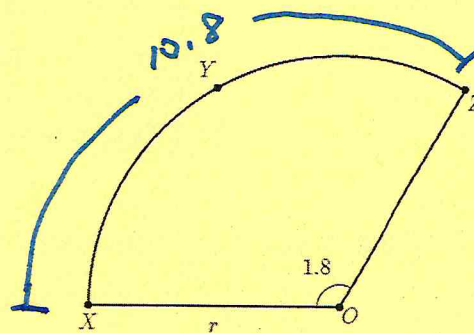
$C = \text{circumference}$

$$\frac{1.8}{2\pi} = \frac{10.8}{C}$$

$$C = 37.7 \Rightarrow C = 2\pi r$$

$$37.7 = 2\pi r$$

$$r = 3$$



a) $\sqrt{12}$

b) $\frac{50}{3}$

c) 19.44

d) 6

Due to weather, a barge captain decides to reach her destination in two legs: one due north and one due west. On a direct route, her destination is about 1,830 miles (mi) away; see the figure above. If after traveling 605 mi due north the captain determines it is time to head due west, how many more miles are left in the trip? (Round the answer to the nearest mile.)

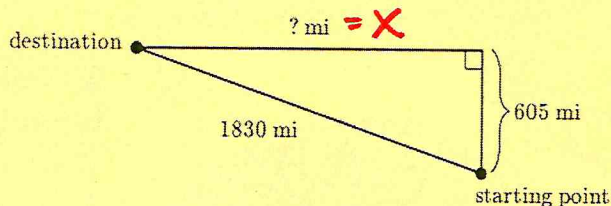
$$a^2 + b^2 = c^2$$

$$x^2 + 605^2 = 1830^2$$

$$x^2 + 366025 = 3348900$$

$$x^2 = 2982875$$

$$x \approx 1727 \text{ mi}$$



It is given that $\sin(70^\circ) \approx 0.94$, $\cos(70^\circ) \approx 0.34$, and $\tan(70^\circ) \approx 2.7$. In the figure at left, $\angle ABC$ and $\angle BCD$ are right angles. Which of the following is closest to the length of \overline{AB} ?

A 9.83

B 13.90

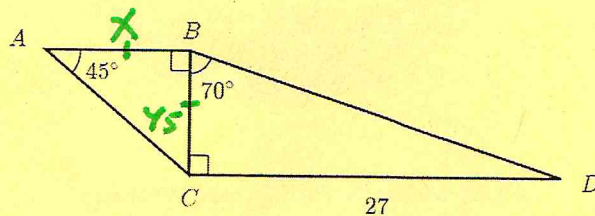
C 25.37

D 28.74

$\triangle ABC$ is a
45-45-90 \triangle

$$h = \sqrt{2}s$$

$$AB = BC$$



$$\tan = \frac{\text{opp}}{\text{adj}}$$

$$\tan 70 = \frac{27}{x}$$

$$2.7 = \frac{27}{x}$$

$$x = \frac{27}{2.7} = 10$$