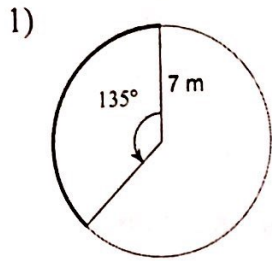
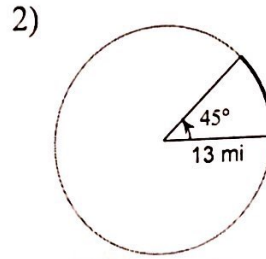


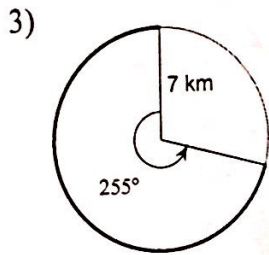
Find the length of each arc. Exact answers in terms of pi



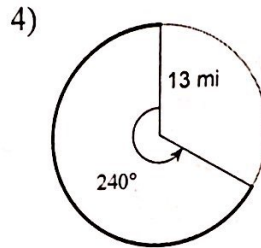
$$\frac{21\pi}{4} \text{ m}$$



$$\frac{13\pi}{4} \text{ mi}$$



$$\frac{119\pi}{12} \text{ km}$$



$$\frac{52\pi}{3} \text{ mi}$$

5) $r = 10 \text{ ft}, \theta = 300^\circ$

$$\frac{50\pi}{3} \text{ ft}$$

6) $r = 4 \text{ m}, \theta = 90^\circ$

$$2\pi \text{ m}$$

7) $r = 13 \text{ m}, \theta = 285^\circ$

$$\frac{247\pi}{12} \text{ m}$$

8) $r = 7 \text{ mi}, \theta = 240^\circ$

$$\frac{28\pi}{3} \text{ mi}$$

Find the length of each arc. Round your answers to the nearest tenth.

9) $r = 5 \text{ m}, \theta = 120^\circ$

$$10.5 \text{ m}$$

$$\frac{120}{360} \cdot 2\pi(5) = \frac{10\pi}{3} \text{ m}$$

10) $r = 11 \text{ cm}, \theta = 240^\circ$

$$46.1 \text{ cm}$$

$$\frac{240}{360} \cdot 2\pi(11) = \frac{44\pi}{3} \text{ cm}$$

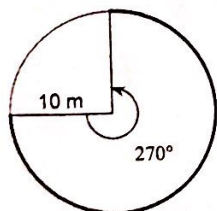
11) $r = 9 \text{ in}, \theta = 285^\circ$

$$44.8 \text{ in}$$

12) $r = 11 \text{ ft}, \theta = 165^\circ$

$$31.7 \text{ ft}$$

13)

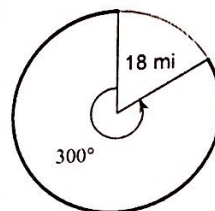


$$47.1 \text{ m}$$

$$\frac{270}{360} \cdot 2\pi(10)$$

$$15\pi \text{ m}$$

14)

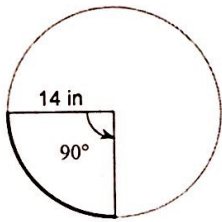


$$94.2 \text{ mi}$$

$$\frac{300}{360} \cdot 2\pi(18)$$

$$30\pi \text{ mi}$$

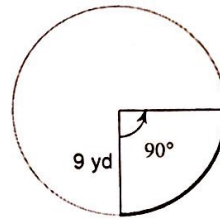
15)



22.0 in

$$\frac{90}{360} \cdot 2\pi(14)$$

16)

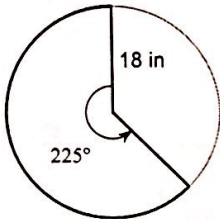


14.1 yd

$$\frac{90}{360} \cdot 2\pi(9)$$

Find the area of each sector. Round your answers to the nearest tenth.

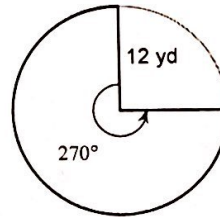
17)

636.2 in²

$$\frac{225}{360} \cdot \pi(18)^2$$

$$= \frac{405\pi}{2} \text{ in}^2$$

18)

339.3 yd²

$$\frac{270}{360} \cdot \pi(12)^2$$

$$= 108\pi \text{ yd}^2$$

19) $r = 12 \text{ m}, \theta = 225^\circ$ 282.7 m²

$$\frac{225}{360} \cdot \pi(12)^2 =$$

20) $r = 10 \text{ mi}, \theta = 315^\circ$ 274.9 mi²

$$\frac{315}{360} \cdot \pi(10)^2$$

21) $r = 20 \text{ mi}, \theta = 300^\circ$ 1047.2 mi²22) $r = 15 \text{ mi}, \theta = 135^\circ$ 265.1 mi²

Find the area of each sector. Exact answers in terms of pi

23) $r = 5 \text{ ft}, \theta = 225^\circ$

$$\frac{125\pi}{8} \text{ ft}^2$$

24) $r = 7 \text{ km}, \theta = 60^\circ$

$$\frac{49\pi}{6} \text{ km}^2$$

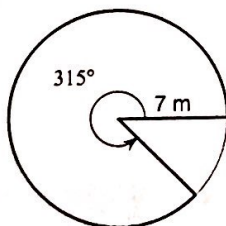
25) $r = 10 \text{ cm}, \theta = 210^\circ$

$$\frac{175\pi}{3} \text{ cm}^2$$

26) $r = 8 \text{ cm}, \theta = 120^\circ$

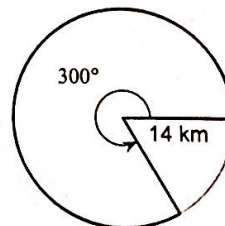
$$\frac{64\pi}{3} \text{ cm}^2$$

27)



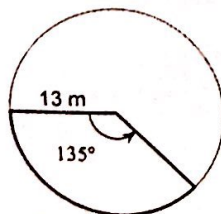
$$\frac{343\pi}{8} \text{ m}^2$$

28)



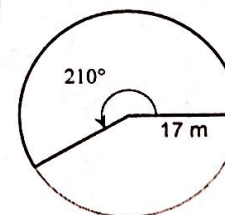
$$\frac{490\pi}{3} \text{ km}^2$$

29)



$$\frac{507\pi}{8} \text{ m}^2$$

30)



$$\frac{2023\pi}{12} \text{ m}^2$$