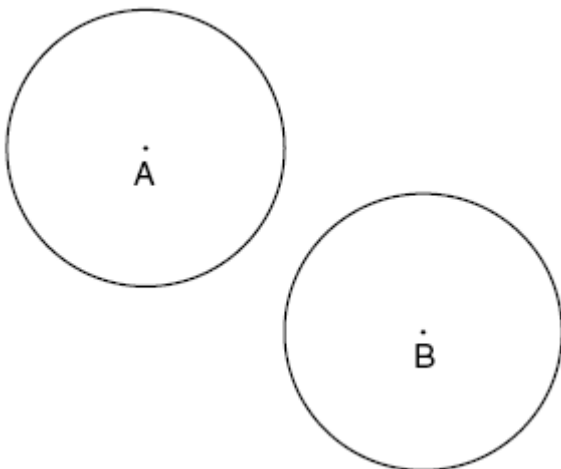


NAME: \_\_\_\_\_

1. fall0824ge, P.I. G.G.50

In the diagram below, circle  $A$  and circle  $B$  are shown.

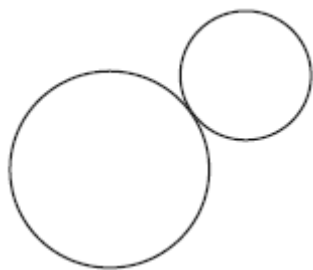


What is the total number of lines of tangency that are common to circle  $A$  and circle  $B$ ?

- [A] 3      [B] 1      [C] 4      [D] 2

2. 080928ge, P.I. G.G.50

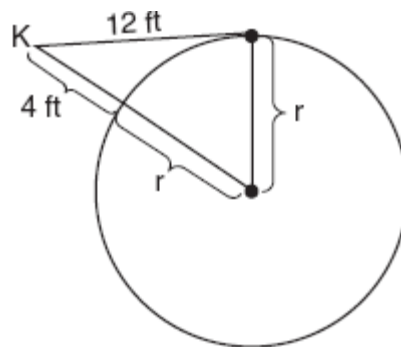
How many common tangent lines can be drawn to the two externally tangent circles shown below?



- [A] 2      [B] 4      [C] 1      [D] 3

3. 080518b, P.I. G.G.50

Kimi wants to determine the radius of a circular pool without getting wet. She is located at point  $K$ , which is 4 feet from the pool and 12 feet from the point of tangency, as shown in the accompanying diagram.



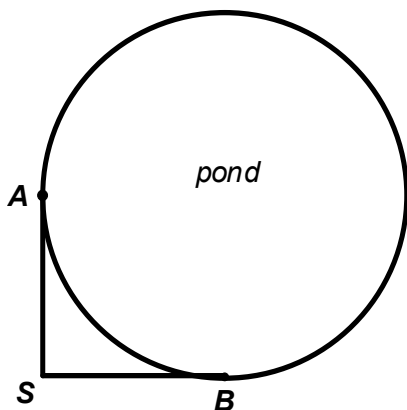
What is the radius of the pool?

- [A] 20 ft      [B] 32 ft  
[C]  $4\sqrt{10}$  ft      [D] 16 ft

NAME: \_\_\_\_\_

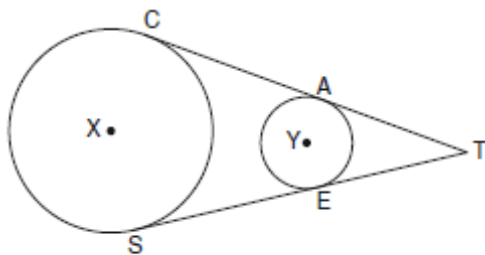
4. fall9926b, P.I. G.G.50

Two docks,  $A$  and  $B$ , are located on a circular pond as shown in the diagram below. A surveyor wants to determine the distance these two docks are from each other across the pond. The surveyor, located at point  $S$ , knows that he is 200 yards from both docks and his measuring equipment indicates that there is a  $90^\circ$  angle between his sight lines to dock  $A$  and to dock  $B$ . How far, to the nearest tenth of a yard, is it across the pond from dock  $A$  to dock  $B$ ?



5. 060935ge, P.I. G.G.50

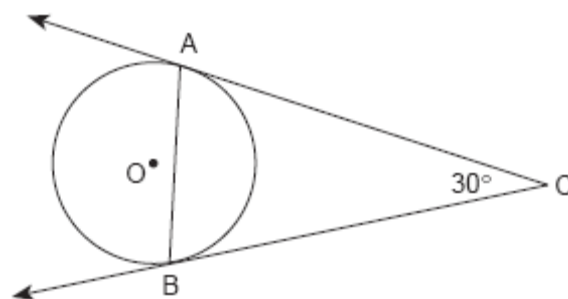
In the diagram below, circles  $X$  and  $Y$  have two tangents drawn to them from external point  $T$ . The points of tangency are  $C$ ,  $A$ ,  $S$ , and  $E$ . The ratio of  $TA$  to  $AC$  is 1:3. If  $TS = 24$ , find the length of  $SE$ .



(Not drawn to scale)

6. 010213b, P.I. G.G.50

The accompanying diagram represents circular pond  $O$  with docks located at points  $A$  and  $B$ . From a cabin located at  $C$ , two sightings are taken that determine an angle of  $30^\circ$  for tangents  $\overline{CA}$  and  $\overline{CB}$ .

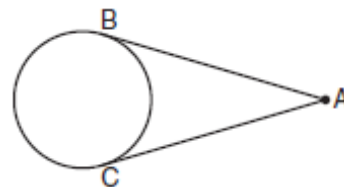


What is  $m\angle CAB$ ?

- [A] 75 [B] 30 [C] 150 [D] 60

7. 060924b, P.I. G.G.50

The accompanying diagram shows two lengths of wire attached to a wheel, so that  $\overline{AB}$  and  $\overline{AC}$  are tangent to the wheel. If the major arc  $\widehat{BC}$  has a measure of  $220^\circ$ , find the number of degrees in  $m\angle A$ .



[1] C \_\_\_\_\_

[2] D \_\_\_\_\_

[3] D \_\_\_\_\_

[2] 282.8 using an appropriate method such as law of cosines, Pythagorean Theorem, right triangle trig or special right triangle 45, 45, 90.

[1] Gives a correct answer of 282.8 with no work shown.

or [1] Gives an incorrectly rounded answer such as 283, or 282.84, or 282.

or [1] Uses the Pythagorean Theorem correctly, but makes an incorrect substitution for one of the sides, and then rounds correctly.

or [1] Uses an appropriate method, but makes a calculation mistake and then rounds answer correctly.

[0] A zero response is completely incorrect, irrelevant, or incoherent; or is a correct response that was obtained by an obviously

[4] incorrect procedure.

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[4] 18, and appropriate work is shown, such as  $3x + x = 24$ .

[3] Appropriate work is shown, but one computational error is made.

or [3]  $x = 6$ , and appropriate work is shown, but  $\overline{SE}$  is not found or is found incorrectly.

[2] Appropriate work is shown, but two or more computational errors are made.

or [2] Appropriate work is shown, but one conceptual error is made.

[1] Appropriate work is shown, but one conceptual error and one computational error are made.

or [1] 18, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[5] incorrect procedure.

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[6] A \_\_\_\_\_

[2] 40, and appropriate work is shown.

[1] Appropriate work is shown, but one computational error is made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] 40, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[7] incorrect procedure.

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