

Use this space for
computations.

- 19 In right triangle ABC , $m\angle A = 32^\circ$, $m\angle B = 90^\circ$, and $AC = 6.2$ cm. What is the length of \overline{BC} , to the nearest tenth of a centimeter?
- (1) 3.3 (3) 5.3
(2) 3.9 (4) 11.7

- 20 The 2010 U.S. Census populations and population densities are shown in the table below.

State	Population Density $\left(\frac{\text{people}}{\text{mi}^2}\right)$	Population in 2010
Florida	350.6	18,801,310
Illinois	231.1	12,830,632
New York	411.2	19,378,102
Pennsylvania	283.9	12,702,379

- Based on the table above, which list has the states' areas, in square miles, in order from largest to smallest?
- (1) Illinois, Florida, New York, Pennsylvania
(2) New York, Florida, Illinois, Pennsylvania
(3) New York, Florida, Pennsylvania, Illinois
(4) Pennsylvania, New York, Florida, Illinois

- 21 In a right triangle, $\sin (40 - x)^\circ = \cos (3x)^\circ$. What is the value of x ?
- (1) 10 (3) 20
(2) 15 (4) 25

- 22 A regular decagon is rotated n degrees about its center, carrying the decagon onto itself. The value of n could be
- (1) 10° (3) 225°
(2) 150° (4) 252°

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23 In a circle with a diameter of 32, the area of a sector is $\frac{512\pi}{3}$. The measure of the angle of the sector, in radians, is

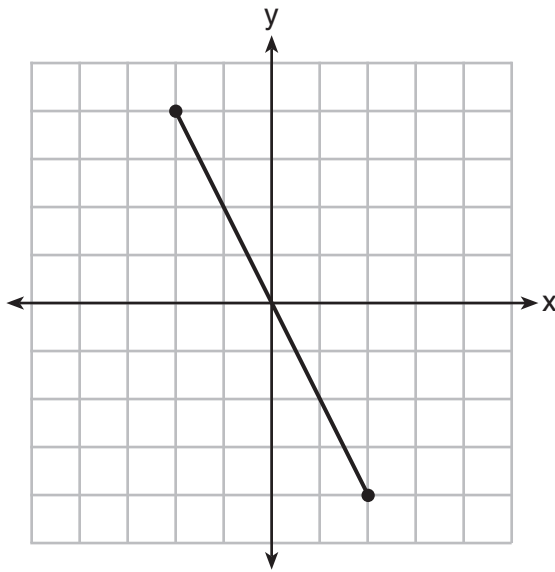
(1) $\frac{\pi}{3}$

(3) $\frac{16\pi}{3}$

(2) $\frac{4\pi}{3}$

(4) $\frac{64\pi}{3}$

24 What is an equation of the perpendicular bisector of the line segment shown in the diagram below?



(1) $y + 2x = 0$

(3) $2y + x = 0$

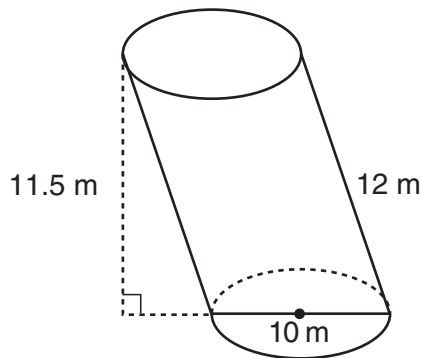
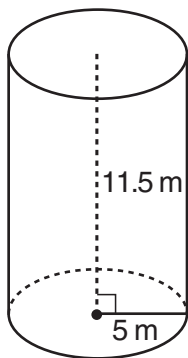
(2) $y - 2x = 0$

(4) $2y - x = 0$

Part II

Answer all 7 questions in this part. Each correct answer will receive 2 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. Utilize the information provided for each question to determine your answer. Note that diagrams are not necessarily drawn to scale. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [14]

25 Sue believes that the two cylinders shown in the diagram below have equal volumes.



Is Sue correct? Explain why.

26 In the diagram of rhombus $PQRS$ below, the diagonals \overline{PR} and \overline{QS} intersect at point T , $PR = 16$, and $QS = 30$. Determine and state the perimeter of $PQRS$.

