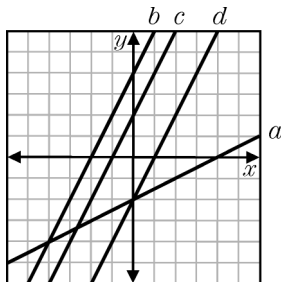


Name: _____

Date: _____

1. Which line is the graph of the *inverse* of $y = \frac{1}{2}x - 2$?

- A. line *a*
 B. line *b*
 C. line *d*
 D. none of these

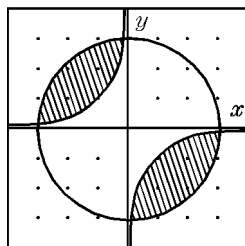


2. What mapping is applied to the unit circle $x^2 + y^2 = 1$ to obtain the equation $\frac{x^2}{9} + 81y^2 = 4$?

- A. $(x, y) \rightarrow \left(6x, \frac{9y}{2}\right)$
 B. $(x, y) \rightarrow \left(\frac{x}{6}, \frac{2y}{9}\right)$
 C. $(x, y) \rightarrow \left(\frac{x}{36}, \frac{4y}{81}\right)$
 D. $(x, y) \rightarrow \left(6x, \frac{2y}{9}\right)$

3. What is the equation of the system that would give the graph shown?

- A. $xy \geq -1$
 $x^2 + y^2 \leq 9$
 B. $xy \leq -1$
 $x^2 + y^2 \leq 9$
 C. $xy \leq 1$
 $x^2 + y^2 \geq 9$
 D. $xy \leq -1$
 $x^2 + y^2 \geq 9$

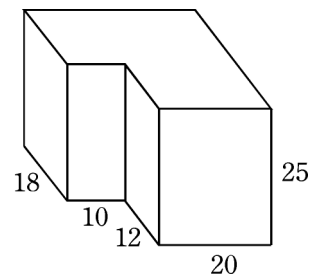


4. The slope of a line segment is -3 . The line segment has endpoints $J(-3, 9)$ and $K(2, \ell)$. What is the value of ℓ ?

- A. -24 B. -6 C. $-\frac{2}{3}$ D. 12

5. In the figure, all angles are right and the measurements are in centimeters. What is the volume of the object?

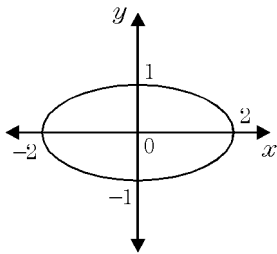
- A. 10360 cm^3
 B. 18200 cm^3
 C. 19500 cm^3
 D. 22500 cm^3



6. The line represented by $y = 3x - 4$ and a line perpendicular to it intersect at $R(0, -4)$. What is the equation of the perpendicular line?

- A. $y = -\frac{1}{3}x$ B. $y = -\frac{1}{3}x - 4$
 C. $y = -3x + 4$ D. $y = -3x - 4$

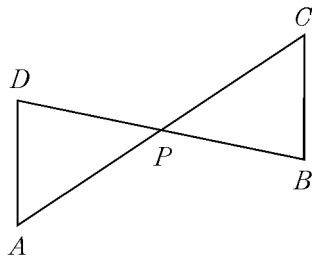
7. In the diagram, the ellipse is a transformation of the unit circle ($x^2 + y^2 = 1$). What is the expansion that was used?



- A. $(x, y) \rightarrow (x, 2y)$ B. $(x, y) \rightarrow (2x, y)$
 C. $(x, y) \rightarrow \left(\frac{x}{2}, y\right)$ D. $(x, y) \rightarrow \left(\frac{x}{4}, y\right)$

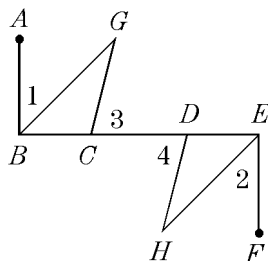
8. In the figure, \overline{AC} and \overline{DB} bisect each other, and $\overline{AD} \cong \overline{CB}$. What postulate or theorem can be used to prove $\triangle ADP \cong \triangle CBP$?

- A. ASA
 B. H-L
 C. SAS
 D. SSS



9. Given the figure with $\overline{AB} \perp \overline{BE}$, $\overline{EF} \perp \overline{BE}$, $\angle 1 \cong \angle 2$, $\angle 3 \cong \angle 4$, and $\overline{BD} \cong \overline{EC}$. What postulate or theorem would prove $\triangle BCG \cong \triangle EDH$?

- A. AA B. H-L
 C. SAS D. SSS

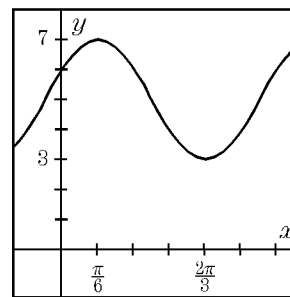


10. If r varies directly as t^2 , and $r = 90$ when $t = 3$, then what is r when t is 8?

- A. 80 B. 160 C. 450 D. 640

11. If the equation of the graph shown is written in the form $y = a \cos b(x - c) + d$, where $a > 0$, what is the value of c ?

- A. $-\frac{\pi}{12}$
 B. $-\frac{\pi}{6}$
 C. $\frac{\pi}{6}$
 D. π



12. What is $12x^2y + 35x^3y^2$ divided by $15x^2$?

- A. $\frac{4}{5}y + \frac{7}{3}xy^2$ B. $\frac{4}{5}y + \frac{7}{3}x^3$
 C. $\frac{4}{5}x^2y + \frac{7}{3}xy$ D. $\frac{4}{5}x^3y^3$

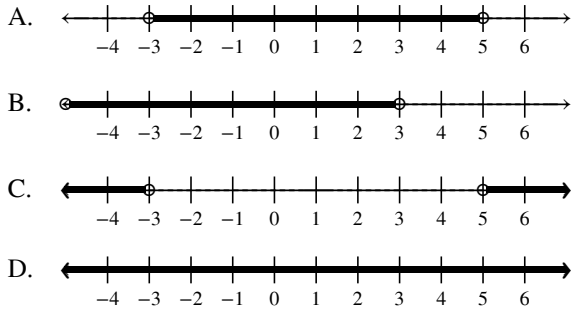
13. Given this matrix equation:

$$\begin{bmatrix} j \\ k \end{bmatrix} + \begin{bmatrix} 2k \\ -5 \end{bmatrix} = \begin{bmatrix} 20 \\ 9 \end{bmatrix}$$

What is the sum $j + k$?

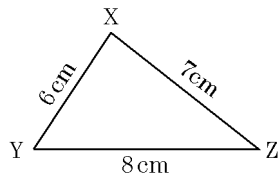
- A. -24 B. 20 C. 27 D. 34

14. Which of the following graphs represents the solution to $\left| \frac{3}{4}x - \frac{3}{4} \right| > 3$?



15. What is the value of the $\cos m\angle XZY$?

- A. $\frac{1}{8}$ B. $\frac{1}{4}$
 C. $\frac{1}{2}$ D. $\frac{11}{16}$

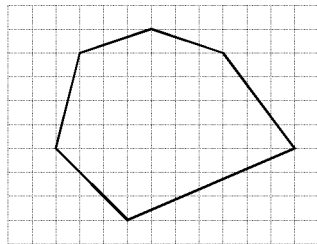


16. For what value(s) of θ is the expression $\frac{\sin^2 \theta}{1 + \cos^2 \theta}$ undefined?

- A. 90° B. 180° C. 270° D. never

17. Using the smallest grid squares as the unit of area, what is the area of the hexagon?

- A. 32
 B. 43
 C. 47
 D. 48.5

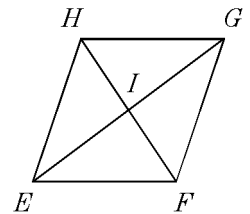


18. Two angles are supplementary. If the measure of the larger angle is 40 more than 6 times the smaller, what is the measure of the smaller angle?

- A. 20° B. 28° C. $31\frac{3}{7}^\circ$ D. 160°

19. In parallelogram $EFGH$, if $HF = 5x + 18$ and $HI = 3x + 4$, what is IF ?

- A. 10 B. 34
 C. 68 D. 136



20. The point $(-2, 4)$ is moved using the translation $(x, y) \rightarrow (x + 4, y - 2)$. What are the coordinates of the new point?

- A. $(-6, -2)$ B. $(2, 2)$
 C. $(2, 4)$ D. $(4, 4)$

1.
Answer: B
2.
Answer: D
3.
Answer: B
4.
Answer: B
5.
Answer: C
6.
Answer: B
7.
Answer: B
8.
Answer: D
9.
Answer: C
10.
Answer: D
11.
Answer: C
12.
Answer: A
13.
Answer: B
14.
Answer: C
15.
Answer: D
16.
Answer: D
17.
Answer: C
18.
Answer: A
19.
Answer: B
20.
Answer: B

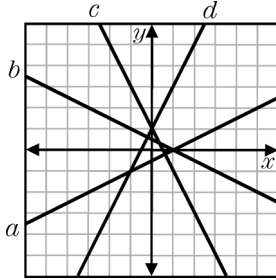
ACT Practice Test B

Name: _____

Date: _____

1. Which line is the graph of the *inverse* of $y = 2x + 1$?

- A. line *a*
 B. line *c*
 C. line *d*
 D. none of these

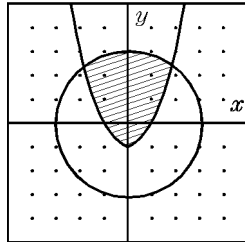


2. What mapping is applied to the unit circle $x^2 + y^2 = 1$ to obtain the equation $25x^2 + y^2 = 4$?

- A. $(x, y) \rightarrow \left(\frac{2x}{5}, \frac{y}{2}\right)$ B. $(x, y) \rightarrow \left(\frac{4x}{25}, \frac{y}{4}\right)$
 C. $(x, y) \rightarrow \left(\frac{2x}{5}, 2y\right)$ D. $(x, y) \rightarrow \left(\frac{x}{2}, \frac{2y}{5}\right)$

3. What is the equation of the system that would give the graph shown?

- A. $x^2 + y^2 \leq 9$
 $y \geq x^2 - 1$
 B. $x^2 + y^2 \leq 9$
 $y \leq x^2 - 1$
 C. $x^2 + y^2 \leq 9$
 $y \geq x^2 + 1$
 D. $x^2 + y^2 \geq 9$
 $y \leq x^2 - 1$

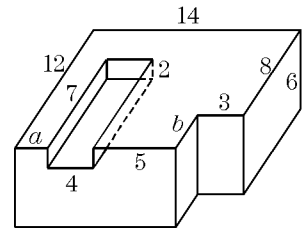


4. The slope of a line segment is 4. The line segment has endpoints $G(2, 3)$ and $H(4, d)$. What is the value of d ?

- A. 2.5 B. 5 C. 8 D. 11

5. In the figure, all angles are right and the measurements are in centimeters. What is the volume of the object?

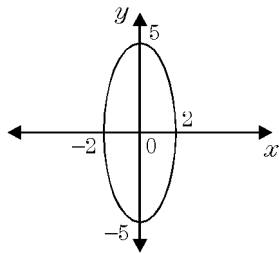
- A. 680 units³
 B. 880 units³
 C. 960 units³
 D. 990 units³



6. The line represented by $y = \frac{1}{2}x - 1$ and a line perpendicular to it intersect at $R(2, 0)$. What is the equation of the perpendicular line?

- A. $y = 2x + 1$ B. $y = -2x - 1$
 C. $y = -2x + 4$ D. $y = -2x$

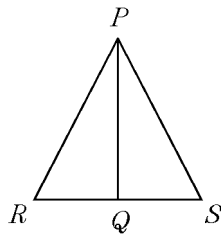
7. In the diagram, the ellipse is a transformation of the unit circle ($x^2 + y^2 = 1$). What is the expansion that was used?



- A. $(x, y) \rightarrow \left(\frac{5x}{2}, y\right)$ B. $(x, y) \rightarrow \left(\frac{25x}{4}, y\right)$
 C. $(x, y) \rightarrow (2x, 5y)$ D. $(x, y) \rightarrow \left(\frac{4x}{25}, y\right)$

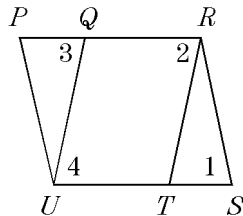
8. In the figure, $\overline{PR} \cong \overline{PS}$ and $\overline{RQ} \cong \overline{SQ}$. What postulate or theorem can be used to prove $\triangle PRQ \cong \triangle PSQ$?

- A. ASA B. H-L
 C. SAS D. SSS



9. Given the figure with $\angle P \cong \angle S$, $\overline{PU} \cong \overline{SR}$, $\overline{PR} \cong \overline{US}$, and $\overline{QU} \parallel \overline{TR}$. What postulate or theorem would prove $\triangle PUQ \cong \triangle SRT$?

- A. AA B. ASA
 C. SAS D. SSS

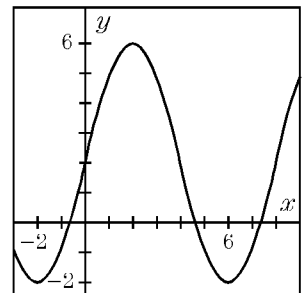


10. If a varies directly as b^2 , and $a = 48$ when $b = 4$, then what is a when b is 7?

- A. 128 B. 131 C. 147 D. 165

11. Given the graph of $y = a \sin b(x + c) + d$ where $a > 0$, what is the value of c ?

- A. 1 B. $-\frac{\pi}{4}$
 C. 0 D. $\frac{\pi}{4}$



12. What is $12xy^2 + 9x^2y - 3xy$ divided by $18x$?

- A. $\frac{2}{3}y^2 + \frac{1}{2}xy - \frac{1}{6}y$ B. $\frac{1}{2}xy^2$
 C. $\frac{2}{3}xy^2 + \frac{1}{2}x^2y - \frac{1}{6}y$ D. $\frac{4}{3}x^5y^4$

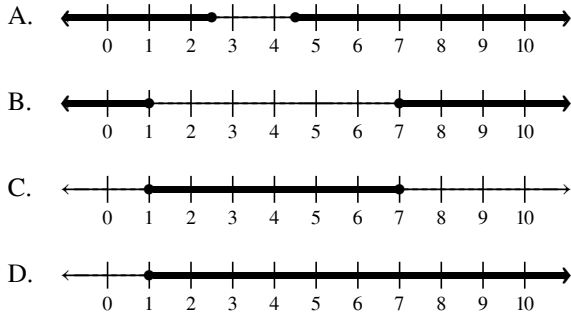
13. Given this matrix equation:

$$\begin{bmatrix} 2r \\ 7 \end{bmatrix} + \begin{bmatrix} 3s \\ -4r \end{bmatrix} = \begin{bmatrix} 16 \\ 5 \end{bmatrix}$$

What is the sum $r + s$?

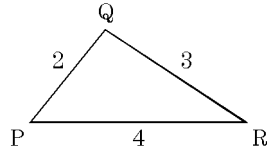
- A. $-3\frac{1}{2}$ B. 5 C. $5\frac{1}{2}$ D. 10

14. Which of the following graphs represents the solution to $|2 - 0.5x| \leq 1.5$?



15. What is the value of $\cos \angle PQR$?

- A. $-\frac{1}{4}$ B. $\frac{3}{16}$
 C. $\frac{7}{16}$ D. $\frac{29}{16}$

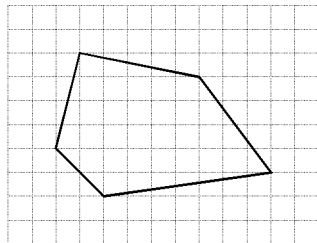


16. For what value(s) of θ is the expression $\frac{\sin^2 \theta}{1 - \sin^2 \theta}$ undefined?

- A. 45° and 90° B. 90° and 270°
 C. 180° D. never

17. Using the smallest grid squares as the unit of area, what is the area of the pentagon?

- A. $33\frac{1}{2}$
 B. 34
 C. $36\frac{1}{2}$
 D. 37

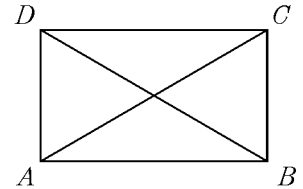


18. Two angles are supplementary. If the measure of the larger angle is 20 less than 4 times the smaller, what is the measure of the smaller angle?

- A. 40° B. 50° C. 100° D. 140°

19. In rectangle $ABCD$, if $AC = 12x - 8$ and $BD = 9x + 4$, what is BD ?

- A. 4 B. 12
 C. 26 D. 40



20. A point is moved using the translation $P(3, -2)$ to $P'(1, 1)$. What are the coordinates of the image of $Q(2, -3)$ under the same translation?

- A. $(-1, 2)$ B. $(0, 0)$
 C. $(1, -2)$ D. $(2, -4)$

1.
Answer: A
2.
Answer: C
3.
Answer: A
4.
Answer: D
5.
Answer: B
6.
Answer: C
7.
Answer: C
8.
Answer: D
9.
Answer: B
10.
Answer: C
11.
Answer: C
12.
Answer: A
13.
Answer: C
14.
Answer: C
15.
Answer: A
16.
Answer: B
17.
Answer: B
18.
Answer: A
19.
Answer: D
20.
Answer: A