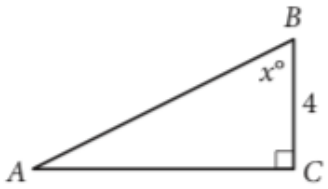
Nc April 2019

11



Note: Figure not drawn to scale.

In the right triangle above, $x = 60$. What is the length of side $\overline{AB}$?

A) 7

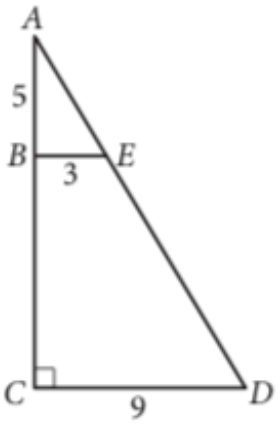
B) 8

C) 9

D) It cannot be determined from the information given.

Calc April 2019

23



In the figure above, $\triangle ACD$ is a right triangle and $\overline{BE}$ is parallel to $\overline{CD}$. What is the perimeter of $\triangle ACD$ to the nearest tenth of a unit?

A) 29.7

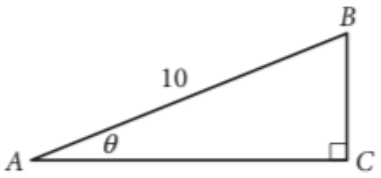
B) 36.0

C) 41.5

D) 50.9

Calc April 2019

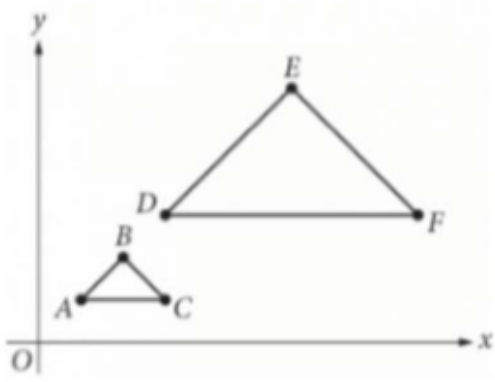
35



In the right triangle above, $\sin\theta = \frac{2}{5}$. If $AC = \sqrt{n}$, what is the value of n ?

October 2019 NC

5



In the xy-plane above, a dilation with center O and scale factor 3 transforms triangle ABC to triangle DEF. Which of the following statements is NOT true?

A) The perimeter of triangle DEF is 3 times the perimeter of triangle ABC.

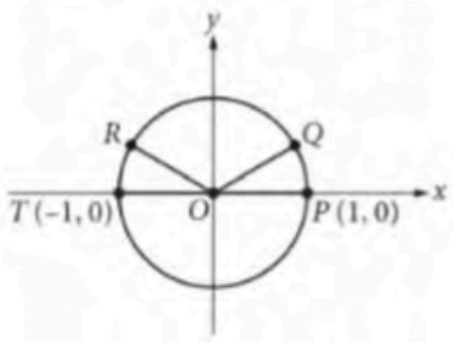
B) The measure of angle E is 3 times the measure of angle B.

C) The length of $\overline{AB}$ is $\frac{1}{3}$ the length of $\overline{DE}$.

D) Angle A is congruent to angle D.

October 2019 NC

11



In the xy-plane above, points P, Q, R, and T lie on the circle with center O. The degree measures of angles POQ and ROT are each 30°. What is the radian measure of angle QOR ?

A) $\frac{5}{6}\pi$

B) $\frac{3}{4}\pi$

C) $\frac{2}{3}\pi$

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

13

A right circular cone has a volume of $\frac{1}{3}\pi$ cubic feet and a height of 9 feet. What is the radius, in feet, of the base of the cone?

A) $\frac{1}{3}$

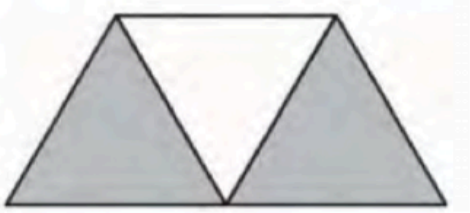
B) $\frac{1}{\sqrt{3}}$

C) $\sqrt{3}$

D) 3

October 2019 C

28



A graphic designer is creating a logo for a company. The logo is shown in the figure above. The logo is in the shape of a trapezoid and consists of three congruent equilateral triangles. If the perimeter of the logo is 20 centimeters, what is the combined area of the shaded regions, in square centimeters, of the logo?

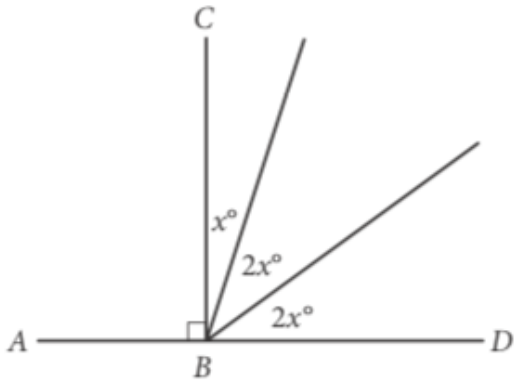
A) $2\sqrt{3}$

B) $4\sqrt{3}$

C) $8\sqrt{3}$

D) 16

8



In the figure above, point B lies on $\overline{AD}$. What is the value of $3x$?

A) 18

B) 36

C) 54

D) 72

11

A circle in the xy-plane has center $(5, 7)$ and radius 2. Which of the following is an equation of the circle?

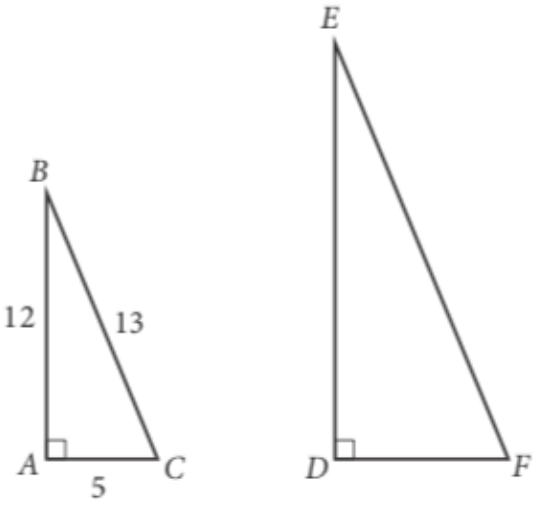
A) $(x-5)^2+(y-7)^2=4$

B) $(x+5)^2+(y+7)^2=4$

C) $(x-5)^2+(y-7)^2=2$

D) $(x+5)^2+(y+7)^2=2$

12



In the figure above, triangle ABC is similar to triangle DEF. What is the value of $\cos(E)$?

A) $\frac{12}{5}$

B) $\frac{12}{13}$

C) $\frac{5}{12}$

D) $\frac{5}{13}$

15

A right circular cone has a volume of 24π cubic inches. If the height of the cone is 2 inches, what is the radius, in inches, of the base of the cone?

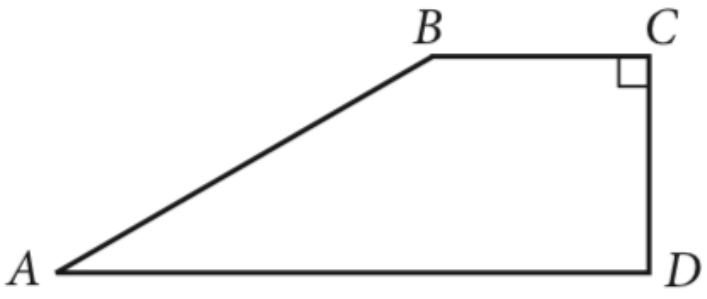
A) $2\sqrt{3}$

B) 6

C) 12

D) 36

30



In quadrilateral $ABCD$ above, $\overline{AD} \parallel \overline{BC}$ and $CD = \frac{1}{2}AB$. What is the measure of angle B ?

A) 150°

B) 135°

C) 120°

D) 90°

17

The volume of a sphere is given by the formula $V = \frac{4}{3}\pi r^3$, where r is the radius of the sphere. Which of the following gives the radius of the sphere in terms of the volume of the sphere?

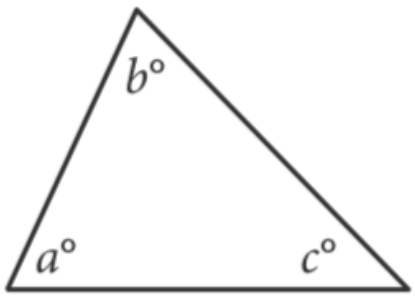
A) $\frac{4\pi}{3V}$

B) $\frac{3V}{4\pi}$

C) $\sqrt[3]{\frac{4\pi}{3V}}$

D) $\sqrt[3]{\frac{3V}{4\pi}}$

32



Note: Figure not drawn to scale.

In the triangle above, $a = 34$. What is the value of $b + c$?

April 2019 Answer Key NC
11.B

April 2019 Calc
23.C
35.84

October 2019 NC
5.B
11.
13.

October 2019 C
28. A

October 2018 NC
8.C
11.A
12.B
October 2018 C
15. B
30.A
17.D
32.146