ID: 55b41004

A circle in the *xy*-plane has its center at $(-4, -6)$. Line k is tangent to this circle at the point $(-7, -7)$. What is the slope of line k?

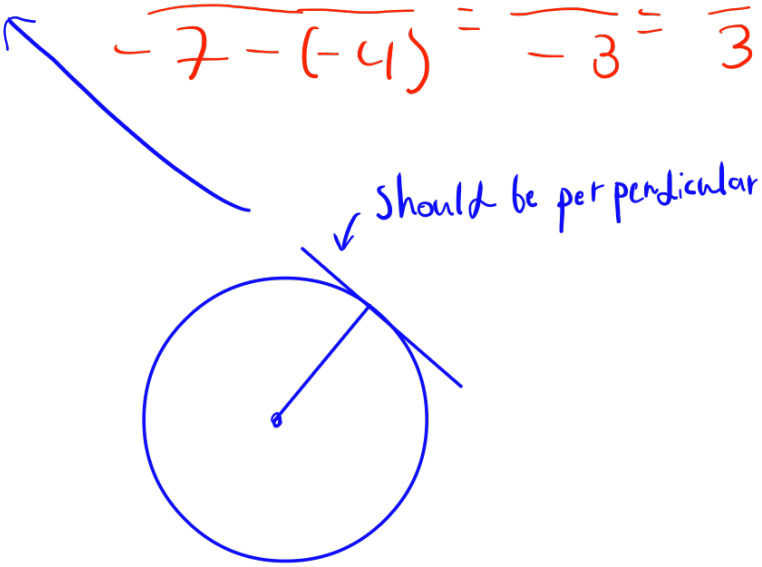
A. -3

B. $-\frac{1}{3}$

C. $\frac{1}{3}$

D. 3

$\frac{-7-(-6)}{-7-(-4)} = \frac{-1}{-3} = \frac{1}{3}$ X



ID: 35d7123b

Triangle ABC is similar to triangle XYZ, such that A, B, and C correspond to X, Y, and Z respectively. The length of each side of triangle XYZ is 2 times the length of its corresponding side in triangle ABC. The measure of side AB is 16. What is the measure of side XY?

A. 14

B. 16

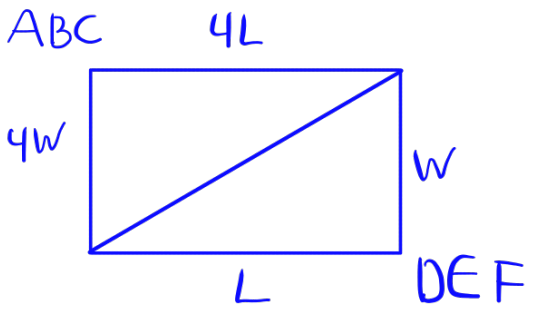
C. 18

D. 32

ID: 8235af09

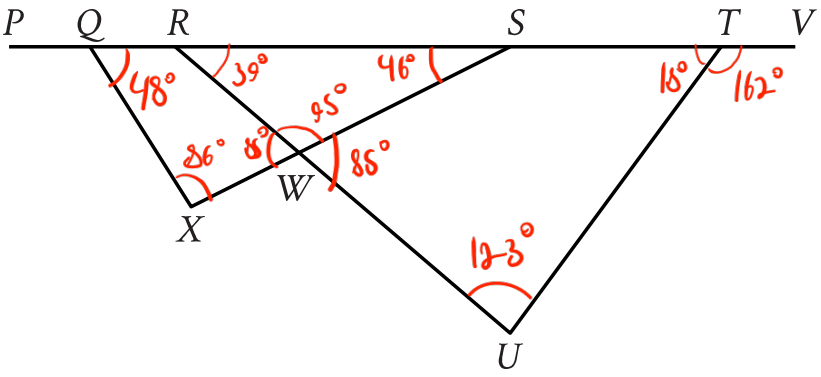
Triangles ABC and DEF are similar. Each side length of triangle ABC is 4 times the corresponding side length of triangle DEF. The area of triangle ABC is 270 square inches. What is the area, in square inches, of triangle DEF?

$270 \cdot 4^2 = 4320 \text{ inch}^2$ X



$$\frac{270}{4^2} = 16.875 \approx 16.88$$

ID: 034aa7ae



Note: Figure not drawn to scale.

In the figure shown, points Q, R, S, and T lie on line segment PV, and line segment RU intersects line segment SX at point W. The measure of $\angle SQX$ is 48°, the measure of $\angle SXQ$ is 86°, the measure of $\angle SWU$ is 85°, and the measure of $\angle VTU$ is 162°. What is the measure, in degrees, of $\angle TUR$?

$\angle TUR = 123^\circ$ ✓

ID: 9ca6e7b4

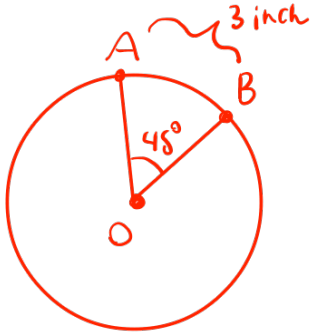
A circle has center O, and points A and B lie on the circle. The measure of arc AB is $45°$ and the length of arc AB is 3 inches. What is the circumference, in inches, of the circle?

A. 3

B. 6

C. 9

D. 24 ✓



Given method:

$$\frac{45°}{360°} = \frac{3 \text{ inch}}{C \text{ inch}}$$

$45x = 1080$

$C = 24$ inch

$C = r\emptyset$

$3 = 45r$

$r = \frac{1}{15}$

$C = 2\pi\left(\frac{1}{15}\right)$

$C = \frac{2}{15}\pi$

$3 = r\left(\frac{45}{360}\right)$

$r = 24$ inch

$C = 2\pi(24)$

$C = 48\pi$

$3 = r\left(\frac{\pi}{4}\right)$

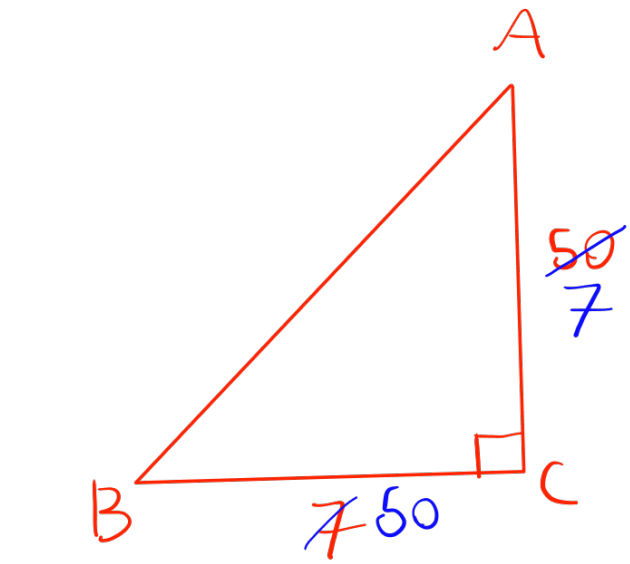
$r = \frac{12}{\pi}$

$C = 2\pi\left(\frac{12}{\pi}\right)$

$C = 24$ inches

ID: 307d7ae0

Triangle ABC is similar to triangle DEF, where angle A corresponds to angle D and angle C corresponds to angle F. Angles C and F are right angles. If $\tan(A) = \frac{50}{7}$, what is the value of $\tan(E)$?



$\tan(E) = \frac{50}{7}$ $\frac{7}{50}$

ID: b2aa5d73

A circle in the *xy*-plane has its center at $(-5, 2)$ and has a radius of 9. An equation of this circle is $x^2 + y^2 + ax + by + c = 0$, where a, b, and c are constants. What is the value of c?

$(-5)^2+(2)^2-5a+2b+c=0$

$25+4-5a+2b+c=0$

$29-5a+2b+c=0$

$c=a+b+1$

$a=(-5)2=-10$

$b=2(2)=4$

$c=25+4+9$

$c=38$

$x^2+ax+y^2+bx+c=0$

$c=\left(\frac{a}{2}\right)^2+\left(\frac{b}{2}\right)^2+1$

$c=\frac{a^2}{4}+\frac{b^2}{4}+9$

$c=\frac{(-5)^2}{4}+\frac{(2)^2}{4}+9$

$c=\frac{25}{4}+\frac{4}{4}+9$

$c=\frac{29}{4}+\frac{36}{4}=\frac{65}{4}$

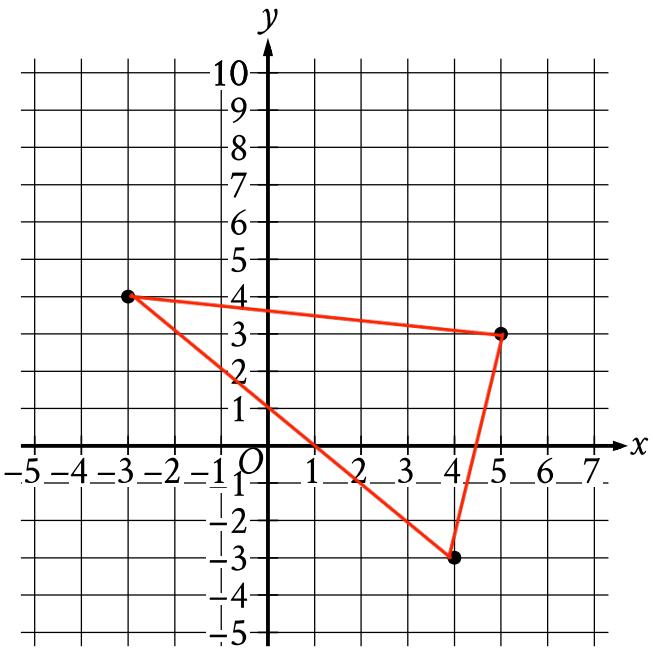
$(x+5)^2+(y-2)^2=9^2$

$x^2+10x+25+y^2-4y+4=81$

$x^2+y^2+10x-4y+29=81$

$x^2+y^2+10x-4y-52=0$ $\Rightarrow c=-52$

ID: 530b2e84



What is the area, in square units, of the triangle formed by connecting the three points shown?

$B = \sqrt{(3-(-3))^2+(5-4)^2}$

$B = \sqrt{36+1}$

$B = \sqrt{37}$

$M_B = \left(\frac{5+4}{2}, \frac{3-3}{2}\right) = \left(\frac{9}{2}, 0\right)$

$H = \sqrt{(4-0)^2+\left(-3-\frac{9}{2}\right)^2}$

$H = \sqrt{16+56.25}$

$H = \sqrt{72.25}$

$A = \frac{1}{2}(\sqrt{37})(\sqrt{72.25})$

$A \approx 25.85$

ID: e5ede4b8

The area of a rectangle is **630** square inches. The length of the rectangle is **70** inches. What is the width, in inches, of this rectangle?

A. **9** ✓

B. **70**

C. **315**

D. **560**

$\frac{630}{70} = W$

$W = 9$ inches

ID: ba00aba9

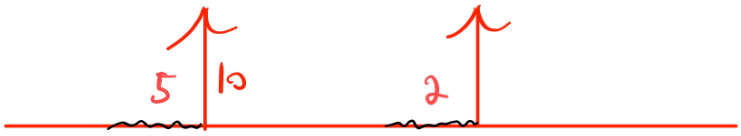
Two nearby trees are perpendicular to the ground, which is flat. One of these trees is **10** feet tall and has a shadow that is **5** feet long. At the same time, the shadow of the other tree is **2** feet long. How tall, in feet, is the other tree?

A. **3**

B. **4** ✓

C. **8**

D. **27**



$$\frac{10}{5} = \frac{h}{2}$$

$$20 = 5h$$

$$h = 4 \text{ ft}$$

ID: 88041348

A circle in the *xy*-plane has its center at $(-4, 5)$ and the point $(-8, 8)$ lies on the circle. Which equation represents this circle?

A. msup $+ (y+5)^2 = 5$

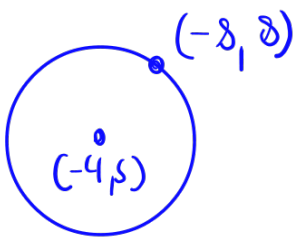
B. msup $+ (y-5)^2 = 5$

C. msup $+ (y+5)^2 = 25$

D. msup $+ (y-5)^2 = 25$

$r = \left|\frac{8-5}{-8-(-4)}\right| = \left|\frac{4}{-5}\right| = \frac{4}{5}$

$r^2 = \frac{16}{25}$



$h = -4$

$k = 5$

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

$(-8+4)^2 + (8-5)^2 = r^2$

$r^2 = 16 + 9$

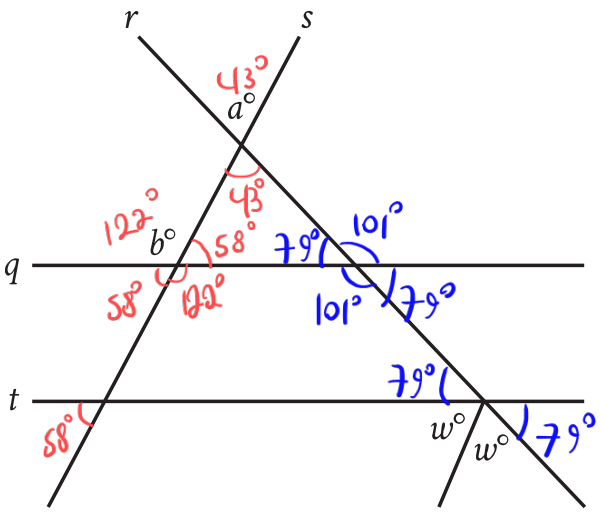
$r = \sqrt{25}$

$r = 5$

$r = \frac{(8-5)}{(-8-(-4))} = -\frac{3}{4}$

$r^2 = \frac{9}{16}$

ID: 9a3b790e



Note: Figure not drawn to scale.

In the figure, parallel lines q and t are intersected by lines r and s. If $a = 43$ and $b = 122$, what is the value of w?

$w = \frac{79^\circ}{2}$

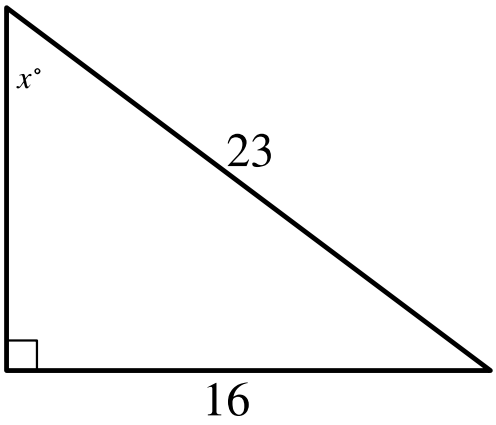
$w = 39.5^\circ$

$180 = 79 - 2w$

$101 = 2w$

$w = 50.5^\circ$

ID: 1dbbea6b



Note: Figure not drawn to scale.

In the triangle shown, what is the value of $\sin x^\circ$?

$\sin x = \frac{16}{23}$ ✓

ID: 489aba1c

A circle has a circumference of 31π centimeters. What is the diameter, in centimeters, of the circle?

$\frac{31\pi}{2\pi} = r$

$15.5 \text{ cm} = r$

$d = 31 \text{ cm}$ ✓

ID: 8e79ef1c

An angle has a measure of $\frac{9\pi}{20}$ radians. What is the measure of the angle in degrees?

$$\frac{\frac{9\pi}{20} \cdot 180}{\pi} = 81^\circ \checkmark$$

$$\frac{\frac{9\pi}{20}}{\pi} = \frac{x}{180}$$

ID: a1060875

A rectangle has a length of **13** and a width of **6**. What is the perimeter of the rectangle?

A. **12**

B. **26**

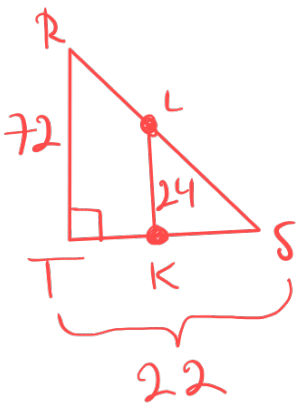
C. **38**

D. **52**

$13(2)+6(2)=38$

ID: c3f47bd8

In triangle RST, angle T is a right angle, point L lies on $\overline{RS}$, point K lies on $\overline{ST}$, and $\overline{LK}$ is parallel to $\overline{RT}$. If the length of $\overline{RT}$ is 72 units, the length of $\overline{LK}$ is 24 units, and the area of triangle RST is 792 square units, what is the length of $\overline{KT}$, in units?



$792 = \frac{1}{2}(B)(72)$

$B = \frac{792}{36} = 22$

$\overline{TS} = 22$

$\frac{24}{72} = \frac{1}{3}$

$22 \cdot \frac{1}{3} = \frac{22}{3}$

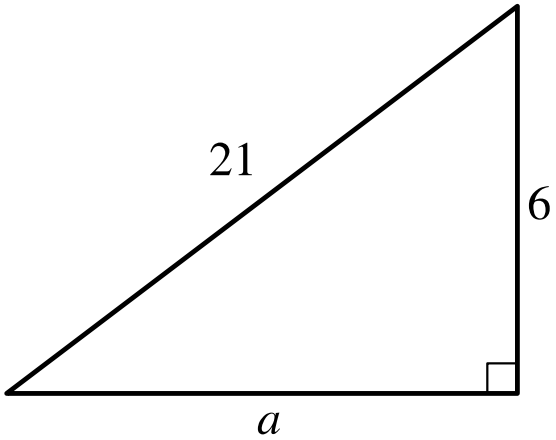
$\overline{KS} = \frac{22}{3}$

$\overline{KT} = 22 - \frac{22}{3}$

$\frac{66}{3} - \frac{22}{3} = \frac{44}{3}$

$\overline{KT} = \frac{44}{3}$ units^2 ✓

ID: de6d51e1



Note: Figure not drawn to scale.

For the triangle shown, which expression represents the value of a?

A. $\sqrt{21^2 - 6^2}$

B. $21^2 - 6^2$

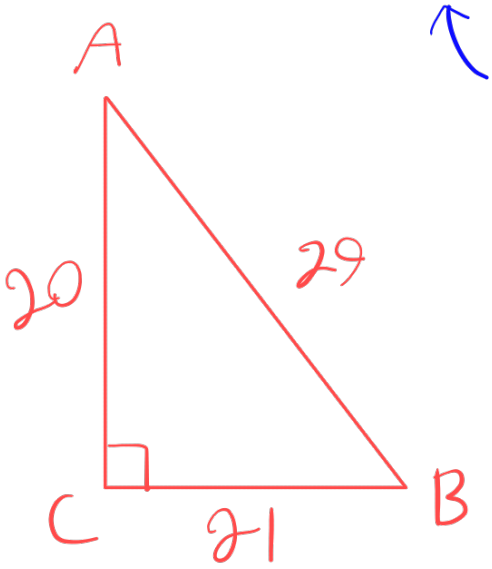
C. $\sqrt{21 - 6}$

D. $21 - 6$

ID: c10968c1

Triangle ABC is similar to triangle DEF, where angle A corresponds to angle D and angles C and F are right angles. The length of $\overline{AB}$ is 2.9 times the length of $\overline{DE}$. If $\tan A = \frac{21}{20}$, what is the value of $\sin D$?

This never comes into play?!?



$\overline{AB} = \sqrt{20^2+21^2} = 29$

$\sin D = \frac{21}{29}$

ID: d32d4957

Triangle ABC is similar to triangle DEF, where A corresponds to D and C corresponds to F. Angles C and F are right angles. If $\tan(A) = \sqrt{3}$ and $DF = 125$, what is the length of $\overline{DE}$?

A. $125\frac{\sqrt{3}}{3}$

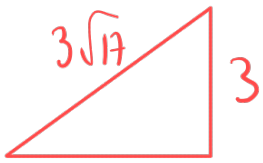
B. $125\frac{\sqrt{3}}{2}$

C. $125\sqrt{3}$

D. 250

ID: 2ab5f0fd

The length of a rectangle's diagonal is $3\sqrt{17}$, and the length of the rectangle's shorter side is 3. What is the length of the rectangle's longer side?



$\sqrt{(3\sqrt{17})^2 - 3^2} = 12$ ✓

ID: 06e0b4a8

The length of a rectangle's diagonal is $5\sqrt{17}$, and the length of the rectangle's shorter side is 5. What is the length of the rectangle's longer side?

A. $\sqrt{17}$

B. 20

C. $15\sqrt{2}$

D. 400

$\sqrt{(5\sqrt{17})^2 - (5)^2}$

$= 20$

ID: 559068d5

A rectangular poster has an area of **360** square inches. A copy of the poster is made in which the length and width of the original poster are each increased by **20%**. What is the area of the copy, in square inches?

$360 \cdot \frac{140}{100} = 504$ inch

$LW = 360$

$(L + 0.2L)(W + 0.2W) = A_n$

$(1.2L)(1.2W) = A_n$

$(LW)(1.2)(1.2) = A_n$

$(360)(1.2)(1.2) = A_n$

$(432)(1.2) = A_n$

$518.4 = A_n$