Trigonometric Ratio For Any Angle Practice

1. The point P(-9,40) is on the terminal arm of an angle θ in standard position. The exact value of cosθ is

   A) $\dfrac{-9}{\sqrt{41}}$
   B) $\dfrac{40}{\sqrt{41}}$
   C) $\dfrac{-9}{41}$
   D) $\dfrac{40}{41}$

2. The exact value of $\sin 315^0$ can be written in the form $\dfrac{-m}{\sqrt{n}}$. The value of n is

   _____.

3. Suppose θ is an angle in standard position with a terminal arm in quadrant one. If $\cos θ = \dfrac{24}{25}$, then tan θ is

   A) $\dfrac{24}{7}$
   B) $\dfrac{7}{24}$
   C) $\dfrac{24}{5}$
   D) $\dfrac{5}{24}$

4. A point P(-6, -K) is in quadrant 3 and on the terminal arm of an angle in standard position. If $\cos θ = \dfrac{-6}{10}$, then the value of K is _____.

5. Which of the following do **not** have a ratio based on special triangles?
   A) $\tan 45^0$
   B) $\sin 150^0$
   C) $\cos 200^0$
   D) $\tan 300^0$

Use the following information to answer the next question.

Two triangles are drawn on a coordinate grid, one in quadrant 1 and one in quadrant 3. Each triangle has the same reference angle.

6. Which statement below is true?
   A) The sine ratios are the same.
   B) The cosine ratios are the same.
   C) The tangent ratios are the same.
   D) None of the ratios are the same.

7. Brett plots the point M(-20,21) and displays it on the terminal arm of an angle in standard position. He then plots another point N(-20,-21) and displays it on the terminal arm of an angle in standard position. He concludes that the cosine of each angle is different. Is he correct? Justify.

1. The point P(-9,40) is on the terminal arm of an angle θ in standard position. The exact value of cosθ is

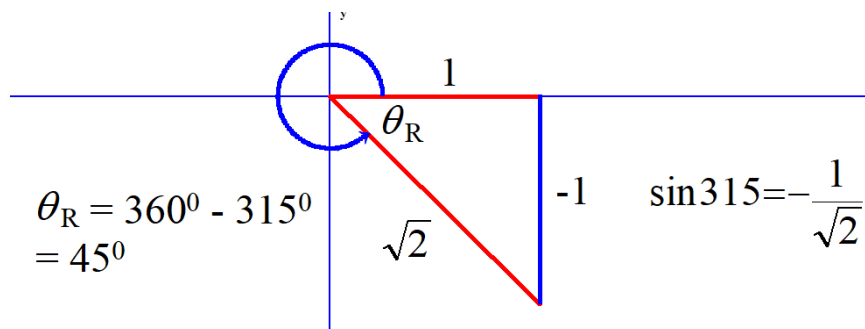A) $\dfrac{-9}{\sqrt{41}}$ B) $\dfrac{40}{\sqrt{41}}$ C) $\dfrac{-9}{41}$ D) $\dfrac{40}{41}$

Solution

P(-9,40)

$(h)^2 = (-9)^2 + (40)^2$

$(h)^2 = 81 + 1600$

$(h)^2 = 1681$

$h = 41$

40   h

-9

θ_R θ

$\cos\theta = \dfrac{-9}{41}$
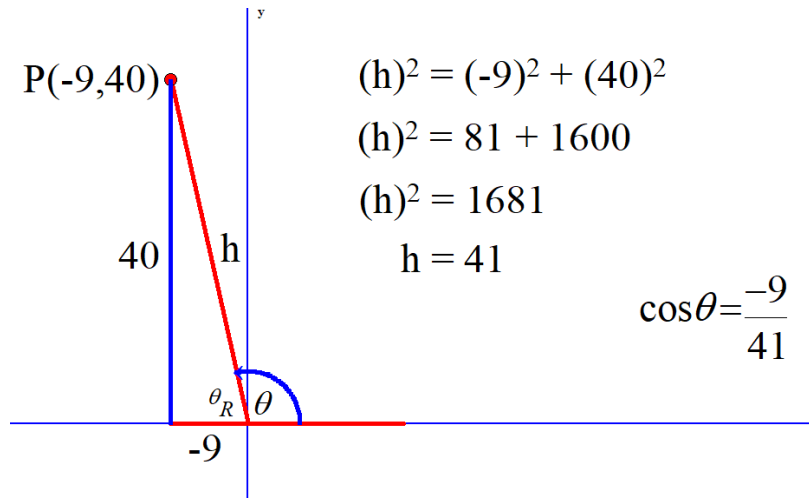
The correct answer is C.

2. The exact value of $\sin 315^0$ can be written in the form $\dfrac{-m}{\sqrt{n}}$. The value of n is _2_.

Solution

$\theta_R = 360^0 - 315^0$
$= 45^0$

1

θ_R

$\sqrt{2}$

-1 $\sin 315 = -\dfrac{1}{\sqrt{2}}$

3. Suppose θ is an angle in standard position with a terminal arm in quadrant one. If $\cos θ = \dfrac{24}{25}$, then $\tan θ$ is

A) $\dfrac{24}{7}$ B) $\dfrac{7}{24}$ C) $\dfrac{24}{5}$ D) $\dfrac{5}{24}$

Solution

$$y^2 = 25^2 - 24^2$$
$$y^2 = 49$$
$$y = 7$$

$\cos θ = \dfrac{24}{25}$

$\tan θ = \dfrac{7}{24}$

25

24

y

θ

The correct answer is B.

4. A point P(-6, -K) is in quadrant 3 and on the terminal arm of an angle in standard position. If $\cos θ = \dfrac{-6}{10}$, then the value of K is __8__.

Solution

θ

-6

$θ_R$

-K

10

(-6,-K)

$$(-K)^2 = 10^2 - (-6)^2$$
$$K^2 = 100 - 36$$
$$K^2 = 64$$
$$K = 8$$

5. Which of the following do **not** have a ratio based on special triangles?

A) $\tan 45^0$ B) $\sin 150^0$ C) $\cos 200^0$ D) $\tan 300^0$

Use the following information to answer the next question.

Two triangles are drawn on a coordinate grid, one in quadrant 1 and one in quadrant 3. Each triangle has the same reference angle.

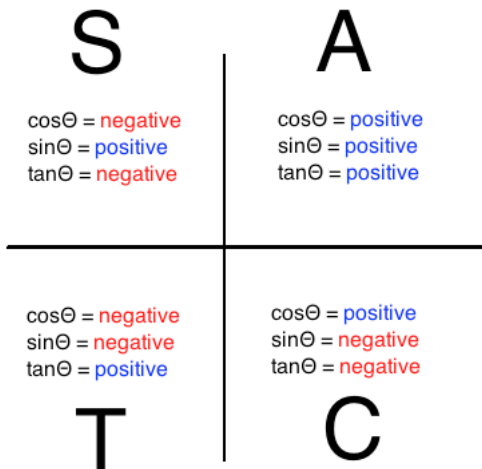6. Which statement below is true?
A) The sine ratios are the same.
B) The cosine ratios are the same.
C) The tangent ratios are the same.
D) None of the ratios are the same.

Solution

Refer to the CAST rule chart below.

| S	A
$\cos\Theta$ = negative $\sin\Theta$ = positive $\tan\Theta$ = negative	$\cos\Theta$ = positive $\sin\Theta$ = positive $\tan\Theta$ = positive
$\cos\Theta$ = negative $\sin\Theta$ = negative $\tan\Theta$ = positive	$\cos\Theta$ = positive $\sin\Theta$ = negative $\tan\Theta$ = negative
T	C

In quadrants one and three, the tangent ratios are positive. If two triangles are drawn, one in quadrant one and one in quadrant three, and both with the same reference angle, the tangent ratios are the same.

The correct answer is C.

7. Brett plots the point M(-20,21) and displays it on the terminal arm of an angle in standard position. He then plots another point N(-20,-21) and displays it on the terminal arm of an angle in standard position. He concludes that the cosine of each angle is different. Is he correct? Justify.

Solution

Plot the points and create the triangles in their respective quadrants.

$(h)^2 = (-20)^2 + (21)^2$
$(h)^2 = 400 + 441$
$(h)^2 = 841$
$h = 29$
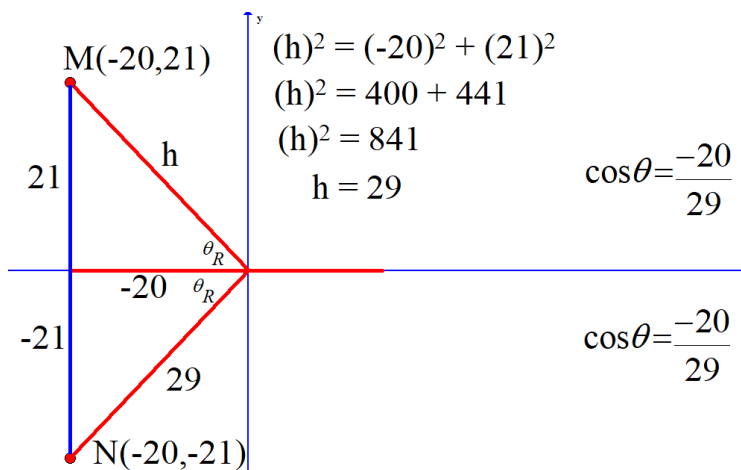
$\cos\theta = \dfrac{-20}{29}$

$\cos\theta = \dfrac{-20}{29}$

Brett is not correct. The value of $\cos\Theta$ is the same; i.e. -20/29.