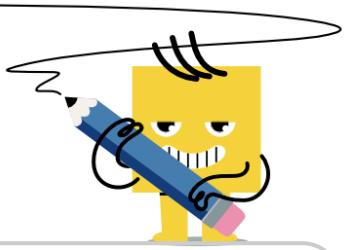
Name



# Trigonometry Identities - Pythagorean Problem Sec to Tan (with Identity, Quadrant as Ratio)

**1**

Using:
$\sec^2(\alpha) = \tan^2(\alpha) + 1$
$\csc(\alpha) \rightarrow$ positive

Solve for tangent from secant using trig identities

Solve:
$\sec(\alpha) = -9$
$\tan(\alpha) = ?$

| A | B |
|---|---|
| $\tan(\alpha) = -4\sqrt{5}$ | $\tan(\alpha) = -2\sqrt{22}$ |

**2**

Using:
$\sec^2(\alpha) = \tan^2(\alpha) + 1$
$\csc(\alpha) \rightarrow$ positive

Solve for tangent from secant using trig identities

Solve:
$\sec(\alpha) = 4$
$\tan(\alpha) = ?$

| A | B |
|---|---|
| $\tan(\alpha) = \sqrt{15}$ | $\tan(\alpha) = -\sqrt{15}$ |

**3**

Using:
$\sec^2(\alpha) = \tan^2(\alpha) + 1$
$\csc(\alpha) \rightarrow$ positive

Solve for tangent from secant using trig identities

Solve:
$\sec(\alpha) = 3$
$\tan(\alpha) = ?$

| A | B |
|---|---|
| $\tan(\alpha) = 2\sqrt{2}$ | $\tan(\alpha) = -2\sqrt{2}$ |

**4**

Using:
$\sec^2(\gamma) = \tan^2(\gamma) + 1$
$\csc(\gamma) \rightarrow$ negative

Solve for tangent from secant using trig identities

Solve:
$\sec(\gamma) = 4$
$\tan(\gamma) = ?$

| A | B |
|---|---|
| $\tan(\gamma) = -\sqrt{15}$ | $\tan(\gamma) = -\sqrt{10}$ |

**5**

Using:
$\sec^2(\theta) = \tan^2(\theta) + 1$
$\csc(\theta) \rightarrow$ negative

Solve for tangent from secant using trig identities

Solve:
$\sec(\theta) = -9$
$\tan(\theta) = ?$

| A | B |
|---|---|
| $\tan(\theta) = 4\sqrt{5}$ | $\tan(\theta) = \sqrt{78}$ |

**6**

Using:
$\sec^2(\gamma) = \tan^2(\gamma) + 1$
$\csc(\gamma) \rightarrow$ positive

Solve for tangent from secant using trig identities

Solve:
$\sec(\gamma) = -7$
$\tan(\gamma) = ?$

| A | B |
|---|---|
| $\tan(\gamma) = -2\sqrt{11}$ | $\tan(\gamma) = -4\sqrt{3}$ |

**7**

Using:
$\sec^2(\alpha) = \tan^2(\alpha) + 1$
$\csc(\alpha) \rightarrow$ positive

Solve for tangent from secant using trig identities

Solve:
$\sec(\alpha) = -4$
$\tan(\alpha) = ?$

| A | B |
|---|---|
| $\tan(\alpha) = -\sqrt{15}$ | $\tan(\alpha) = \sqrt{15}$ |

**8**

Using:
$\sec^2(\alpha) = \tan^2(\alpha) + 1$
$\csc(\alpha) \rightarrow$ negative

Solve for tangent from secant using trig identities

Solve:
$\sec(\alpha) = 9$
$\tan(\alpha) = ?$

| A | B |
|---|---|
| $\tan(\alpha) = 4\sqrt{5}$ | $\tan(\alpha) = -4\sqrt{5}$ |