

<p>1. Express as a single trigonometric function: $\frac{\sin^2 x + \cos^2 x}{\cos x}$</p>	<p>2. The expression $\sin A(\cot A - \csc A)$ is equivalent to (1) $\cos A - \sin^2 A$ (3) $-\sin A$ (2) $2 \cos A$ (4) $\cos A - 1$</p>	<p>1. _____</p> <p>2. _____</p>
<p>3. For all values of x for which the expressions are defined, prove the following is an identity: $\frac{\tan x \csc^2 x}{1 + \tan^2 x} = \cot x$</p>		<p>3. _____</p>
<p>4. Express in simplest form: $\csc \theta \cdot \tan \theta \cdot \cos \theta$</p>	<p>5. On the same set of axes, $y = \sin x$ and $y = \cos x$ are graphed. If the translation $T_{\frac{\pi}{2}, 0}$ is applied to $y = \cos x$, the graphs will (1) intersect at only one point (2) intersect at only two points (3) coincide (4) not intersect at all</p>	<p>4. _____</p> <p>5. _____</p>
<p>6. If $\sin x = \cos x$, in which quadrant(s) may angle x lie? (1) I, only (3) I or III (2) II, only (4) II or IV</p>	<p>7. Write as a single logarithm: $\frac{1}{2} \log a + 2 \log b - \log c$</p>	<p>6. _____</p> <p>7. _____</p>
<p>8. Express in simplest form: $\frac{\frac{3}{x^2} + \frac{1}{x}}{1 - \frac{9}{x^2}}$</p>		<p>8. _____</p>

9. A person who has just finished exercising has a respiratory cycle modeled by the equation $v = 1.8 \sin\left(\frac{2\pi}{3}t\right)$, where v is the velocity of airflow after t seconds. If one respiratory cycle consists of an inhalation ($v > 0$) and an exhalation ($v < 0$):
- a Determine the number of seconds to the *nearest tenth* for one respiratory cycle.
 - b Determine the number of full respiratory cycles completed in 1 minute.
 - c Sketch the graph of $v = 1.8 \sin\left(\frac{2\pi}{3}t\right)$ for one complete respiratory cycle.

