

MATH 150

Sample Exam 3

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1. Given a right triangle $\triangle ABC$, with a 90° angle at point B and with sides BA of length 12 and BC of length 9, if $\theta =$ the angle at point A then what is $\sin(\theta)$?

2. If a ladder is placed with an angle of elevation of 65° against a vertical wall and the ladder is 12 feet long then how far is the base of the ladder from the base of the wall? (express your answer to the nearest tenth of a foot).

3. A small plane is flying at a constant altitude of 10000 feet. It passes over an observer on the ground. Ten seconds later the observer sees the plane at an angle of elevation of 68° . Find the speed of the plane to the nearest **mile per hour** (recall 1 mile = 5280 feet).

4. Find the amplitude, period and phase shift of: $y = 3 \cdot \cos(\pi \cdot (x + \frac{1}{2}))$

5. Find the exact value (no decimals) of $\cot(5\pi / 6) + \cos(30^\circ)$

6. Verify that: $\tan(x) - \tan(y) = \frac{\sin(x - y)}{\cos(x) * \cos(y)}$

7. If $\sin(\theta) = -3/5$ and θ is in quadrant III, find $\tan(\theta)$.

8. Write $\sin(3x)\cos(4x)$ as a sum of trigonometric functions.