Practice Test 1. Right Triangle Trig

Text: Ch. 1, 2, 3

Last Name	First Name	Date

This assignment is closed books, closed notes.

All your scratch work will be collected with the test and discarded.

All electronic devices besides trig-capable nongraphing calculators are prohibited.

Fully justify your answers and show all work
in order to maximize your partial credit.

Leave your answers with simplified radicands and fractions in lowest terms.

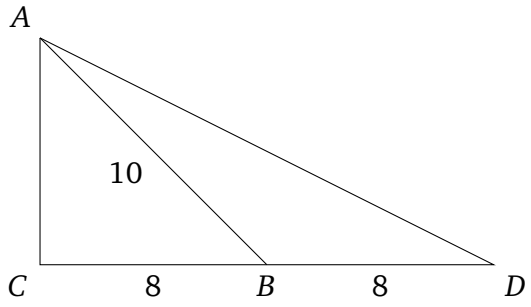
Do not round anything unless directed.

1 (2 points)**.** Triangle ABC has side lengths 30, 45, and 24, while triangle DEF has side lengths 40, 50, and 75. Are they similar triangles? Explain why or why not.

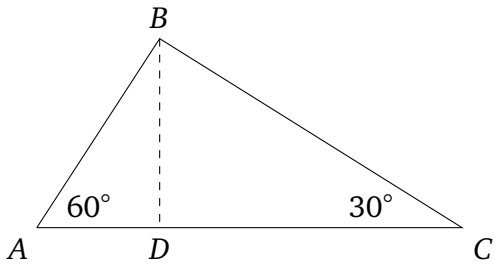
2 (2 points)**.** Triangle ABC has side lengths 5, 5, and 8, while triangle DEF has side lengths 96, 60, and 96. Are they similar triangles? Explain why or why not.

3 (6 points)**.** A 4 foot tall child stands 21 feet away from a lamp post, and drops a shadow that is 7 feet long. Find how tall the lamp post is. Make a sketch and show all work by stating an equation and solving it.

4 (6 points). Given that angle $C = 90^\circ$, find the length of the side AD. Show all work by writing down the equations and the steps for solving them.



5 (7 points). Consider the triangle ABC, with $AC = 16$ and the altitude BD perpendicular to the side AC.



Find:

$AB =$

$AD =$

$BD =$

6 (3 points). Find:

(a) $\cos(-135^\circ) =$

(b) $\tan(120^\circ) =$

(c) $\sin(750^\circ) =$

7 (6 points). Let θ be the angle in the standard position with the point $(-3, 9)$ on its terminal side. Find:

(a) $\sin(\theta) =$

(b) $\sec(\theta) =$

(c) $\cot(\theta) =$

8 (2 points). Find $\cos(\alpha)$ if $\sin(\alpha) = -1/2$ and α is an angle in the 4th quadrant.

9 (3 points). Find $\cot(\beta)$ if $\csc(\beta) = 5$ and β is an angle in the 2nd quadrant.

10 (2 points). Find all angles γ between 0° and 360° with $\cos\gamma = 0$.

11 (6 points)**.** Apply trigonometric identities one by one to the left side of the equation until it turns into the right side.

$$\cot\delta - \cos^3\delta \csc\delta = \sin\delta\cos\delta$$

12 (6 points)**.** Apply trigonometric identities one by one to the left side of the equation until it turns into the right side.

$$\frac{\csc\tau + \cot\tau}{\tan\tau + \sin\tau} = \cot\tau\csc\tau$$

13 (9 points). Solve the right triangle ABC with the right angle C, side $a = 16.5$, and angle $A = 25^\circ$. Round your answers to 3 significant digits. State the answers on the left side, and show your work on the right.

$B =$

$b =$

$c =$

14 (9 points). Solve the right triangle ABC with the right angle C, side $a = 32$, and side $c = 96$. Round your answers to 3 significant digits. State the answers on the left side, and show your work on the right.

$A =$

$B =$

$b =$

15 (6 points)**.** Find the angle of inclination of the given line. Round your answers to 3 significant digits.

(a) $y = -\dfrac{x+7}{4}$

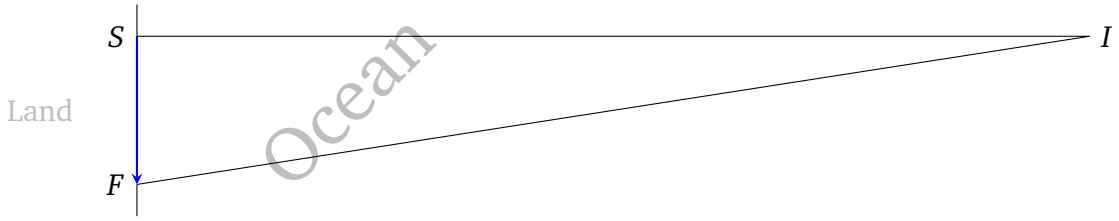
(b) $3 + x - 5y = 7$

16 (4 points)**.** Find an equation of the line passing through the point $(-4, 8)$ with the angle of inclination $\psi = 27^\circ$. Leave your answer in the point-slope form. Round coefficients to 3 significant digits.

17 (4 points)**.** Find an equation of the line passing through the point $(1, -5)$ with the angle of inclination $\phi = 100^\circ$. Leave your answer in the slope-intercept form. Round coefficients to 3 significant digits.

18 (4 points)**.** To find the distance to an island off the coast, Kahula notes a spot S on the coast which is closest to the island I, then walks 300 meters along the beach, and measures the angle between the direction towards the island and the path just walked. This angle F turns out to be 85°, while the angle S is 90°. What is the distance from the shore to the island?

Show work by writing an appropriate equation. Round the answer to 4 significant digits.

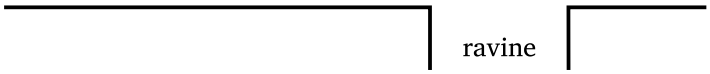


19 (2 points)**.** Express the angle $\sigma = 3°14'15''$, given here in DMS, using the degree measure. Do not round.

20 (4 points)**.** Express the angle ξ, which is one seventh of a degree, using the DMS measure. Round to the nearest second.

21 (7 points)**.** To find the distance across a ravine, Aiko takes some measurements from a small airplane. When she is a short distance from the ravine at an altitude of 600 feet, she finds that the angle of depression to the near side of the ravine is 55°, and the angle of depression to the far side is 31°. What is the width of the ravine?

Finish the sketch and show work by writing down the equations and the steps to solve them. Round the answer to 3 significant digits.



TOTAL POINTS: 100