

Math 06, Homework 8 on Trigonometric Ratios and Applying Right Triangles
due Mon, Nov 4 at the start of class.

Write all your answers on a separate sheet. It is very important that you show clearly any work you had to do to get the answer. These first ten questions are 1 point each. Make sure your answers match the solutions on page 2.

- (1) Let $\triangle UVW$ have $\angle V = 90^\circ$ and lengths $UV = 9$, $VW = 40$ and $UW = 41$. Compute: $\sin U$.
 - (2) Given $\triangle ABC$ with $\angle C = 90^\circ$ and $\sin A = 3/5$. Compute: $\cos A$.
 - (3) Give the **exact** value for: $\sin 60^\circ$
 - (4) With a calculator, find correct to 4 decimal places: $\tan 5^\circ$
 - (5) Without a calculator, find the acute angle A if $\cos A = 1/2$.
 - (6) Given $\triangle ABC$ with $\angle C = 90^\circ$, $\angle A = 25^\circ$, hypotenuse $c = 16.85$. Compute: a , the side opposite A .
 - (7) Given $\triangle ABC$ with $\angle C = 90^\circ$, hypotenuse $c = 15.69$, side $a = 8.08$ (side a is opposite $\angle A$). Compute to the nearest degree: $\angle A$
 - (8) Given $\triangle ABC$ with $\angle C = 90^\circ$, $\angle A = 47.2^\circ$, $b = 82.4$. Solve $\triangle ABC$ (in other words find all its remaining sides and angles).
 - (9) The angle of elevation of the top of a fir tree is 63° from an observation point 50 feet from the base of the tree. Find the height of the tree.
 - (10) A 30-foot pole casts a shadow which is 8 feet long. Find the angle of elevation of the sun.
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These next ten questions are 3 points each. Show clearly all your working out and reasoning.

- (11) Let $\triangle UVW$ have $\angle V = 90^\circ$ and lengths $UV = 9$, $VW = 40$ and $UW = 41$. Compute: $\cos W$.
- (12) Given $\triangle ABC$ with $\angle C = 90^\circ$ and $\cos A = 2/7$. Compute: $\sin A$.
- (13) Give the **exact** value for: $\cos 45^\circ$
- (14) With a calculator, find correct to 4 decimal places: $\cos 24^\circ$

- (15) Without a calculator, find the acute angle A if $\tan A = 1$.
- (16) Give the **exact** value for: $\cos 30^\circ$
- (17) With a calculator, find: $\sin 90^\circ$, $\cos 90^\circ$, $\tan 90^\circ$. Can you explain the calculator's answers?
- (18) Given $\triangle ABC$ with $\angle C = 90^\circ$, $\angle A = 5^\circ$, $b = 10$. Solve $\triangle ABC$ (in other words find all its remaining sides and angles) and sketch the triangle.
- (19) A 100-foot tower casts a 7-foot shadow. What is the angle of elevation of the sun?
- (20) The observation window of a lighthouse is 160 feet above sea level. From there the angle of depression of a yacht is 10° . Find the distance from the lighthouse to the yacht in the correct units.
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Answers to questions (1)-(10):

- (1) $\sin U = 40/41$
- (2) $\cos A = 4/5$
- (3) $\sin 60^\circ = \sqrt{3}/2$ (a decimal answer will not be exact)
- (4) 0.0875
- (5) $\angle A = 60^\circ$
- (6) $a = 7.12$, correct to two places
- (7) To the nearest degree $\angle A = 31^\circ$
- (8) $\angle B = 42.8^\circ$, $a = 88.98$ and $c = 121.28$
- (9) 98.13 feet
- (10) The angle of elevation of the sun is 75.07°