SPH3U
UNIVERSITY PHYSICS

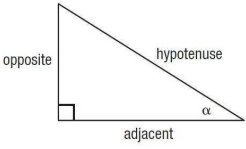REVIEW: MATH SKILLS

☞ Trigonometry

(P.653)

Trigonometry

The first application of trigonometry was to solve right-angle triangles. Trigonometry derives from the fact that for similar triangles, the ratio of corresponding sides will be equal. For a given angle α in a right triangle, there are three important ratios: sine, cosine, and tangent. These are called the **primary trigonometric ratios** *and they can be used to find the measures of unknown sides and angles in right triangles.*

$$\sin\alpha = \frac{opp}{hyp}$$

$$\cos\alpha = \frac{adj}{hyp}$$

$$\tan\alpha = \frac{opp}{adj}$$

opposite · hypotenuse · α · adjacent

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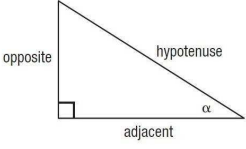

Trigonometry

NOTE!

DEG, RAD, and GRAD are different units/modes used for measuring angles. For this course make sure that your calculator is always in DEG mode. (Hint: if you are not getting the correct answers for a trigonometry problem start by checking this!)

$$\sin\alpha = \frac{opp}{hyp}$$

$$\cos\alpha = \frac{adj}{hyp}$$

$$\tan\alpha = \frac{opp}{adj}$$

opposite · hypotenuse · α · adjacent

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Trigonometry

PRACTICE

1. Determine the value of each ratio rounded to four decimal places.

    (a) sin 35° 0.5736

    (b) cos 60° 0.5000

    (c) tan 45° 1.0000

    (d) cos 75° 0.2588

    (e) sin 18° 0.3090

Trigonometry

RECALL!

If the value of a trigonometric ratio is known, its corresponding angle can be found using the inverse of that ratio. For example, if cos θ = 0.50 then θ = cos $^{-1}$ (0.50).

- *for sin $^{-1}$ use:*   [2nd] [sin]

- *for cos $^{-1}$ use:*   [2nd] [cos]

- *for tan $^{-1}$ use:*   [2nd] [tan]

Trigonometry

PRACTICE

2. Determine the size of ∠A rounded to the nearest degree.

    (a) sin A = 0.5299   32°

    (b) cos A = 0.4226   65°

    (c) tan A = 4.3315   77°

    (d) cos A = 0.5000   60°

    (e) sin A = 0.2419   14°

Trigonometry

PRACTICE

3. Solve for x rounded to one decimal place.
    (a) sin 35° = x/8   4.6
    (b) cos 70° = x/15   5.1
    (c) tan 20° = 3/x   8.2
    (d) sin 85° = 6/x   6.0
    (e) cos 25° = 5/x   5.5

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Trigonometry

PRACTICE

4. Use two different methods to find the value of the unknown(s) in each triangle. Round your answers to one decimal place.

7 mm   X   35°   10 mm

60 cm   θ   26 cm   Y

X = 12.2 mm
Y = 54.1 cm
θ = 64.3 °

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✔ Check Your Learning

WIKI (REVIEW)
• 3UR - QUIZ#2 (Math Skills - Part 2)

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