

Watch. Practice. Understand. | Lesson 191

Pre-Calculus 6 4 Part I Law of Sines

Watch the matching video: <https://www.youtube.com/watch?v=v1TEzsLSSaw>

Practice focus: Law of sines and ambiguous cases

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

01 In triangle ABC, $A = 30^\circ$, $B = 45^\circ$ and $a = 10$. Find b exactly.

02 Given $A = 30^\circ$, $a = 5$ and $b = 8$, determine the number of triangles and possible B angles.

03 Given $A = 30^\circ$, $a = 3$ and $b = 8$, explain why no triangle exists.

04 Given $A = 40^\circ$ and $B = 65^\circ$, find C and state a formula for c if $a = 7$.

Worked answers | Lesson 191

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01 In triangle ABC, $A = 30^\circ$, $B = 45^\circ$ and $a = 10$. Find b exactly.

$$b/\sin 45^\circ = 10/\sin 30^\circ, \text{ so } b = 10\sqrt{2}.$$

02 Given $A = 30^\circ$, $a = 5$ and $b = 8$, determine the number of triangles and possible B angles.

$$\sin B = 8\sin 30^\circ/5 = 0.8. B \approx 53.13^\circ \text{ or } 126.87^\circ. \text{ Both leave } C > 0, \text{ so two triangles.}$$

03 Given $A = 30^\circ$, $a = 3$ and $b = 8$, explain why no triangle exists.

$$\sin B = 8\sin 30^\circ/3 = 4/3 > 1, \text{ impossible.}$$

04 Given $A = 40^\circ$ and $B = 65^\circ$, find C and state a formula for c if $a = 7$.

$$C = 75^\circ. \text{ By sine law } c = 7\sin 75^\circ/\sin 40^\circ \text{ (approximately 10.52).}$$