

Watch. Practice. Understand. | Lesson 192

Pre Calculus 6 5 Law of Cosines

Watch the matching video: <https://www.youtube.com/watch?v=Q-DGiswmd9E>

Practice focus: Law of cosines, area and bearings

Original extra practice matched to the listed lesson topic.

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

01 Two sides are 5 and 7 with included angle 60° . Find the third side.

02 Find the angle opposite side 13 in a triangle with sides 5, 12, 13.

03 Find the area with sides 8 and 10 and included angle 30° .

04 A ship travels 10 km on bearing 030° (clockwise from north). Find east and north displacement.

Worked answers | Lesson 192

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- 01** Two sides are 5 and 7 with included angle 60° . Find the third side.

$$c^2 = 25 + 49 - 2(5)(7)\cos 60^\circ = 39. \text{ Thus } c = \sqrt{39}.$$

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- 02** Find the angle opposite side 13 in a triangle with sides 5, 12, 13.

$$\cos C = (25 + 144 - 169)/(2 \cdot 5 \cdot 12) = 0, \text{ so } C = 90^\circ.$$

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- 03** Find the area with sides 8 and 10 and included angle 30° .

$$A = (1/2)ab \sin C = (1/2)(8)(10)(1/2) = 20.$$

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- 04** A ship travels 10 km on bearing 030° (clockwise from north). Find east and north displacement.

$$\text{East} = 10\sin 30^\circ = 5 \text{ km}; \text{ north} = 10\cos 30^\circ = 5\sqrt{3} \text{ km}.$$