Lecture 38: The law of sines

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Question 1.

Suppose that we have a triangle with sides a, b, and c and angles A, B, and C, following our standard naming convention. Find the length of the altitude on the side c. This is the line perpendicular to the side of length c and which passes through the angle C.

A $a\sin(A)$

B $b\sin(A)$

C $a\sin(B)$

D $b\sin(B)$

E $c\sin(C)$

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C $a\sin(B)$

D $b\sin(B)$

E $c\sin(C)$

There are two right answers. $a\sin(B)$ and $b\sin(A)$.

Question 2.

How many solutions does the equation $\sin(t) = 0.7$ for angles t between 0 and 180°?

A 0

B 1

C 2

D 3

E Infinitely many.

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E Infinitely many.

Examining the graph, shows that there are two solutions.

Question 3.

Suppose that a triangle has an angle whose sine is 0.6 and the side opposite this angle is of length 10. Another side is of length 5. Find the sine of angle opposite the side of length 5.

A 0.1

B 0.2

C 0.3

D 0.4

E 0.5

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C 0.3

D 0.4

E 0.5

If we let $a = 10$ and $\sin(A) = 0.6$ and $c = 5$, we need to find $\sin(C)$. From the law of sines $\sin(C) = c \cdot \sin(A)/a = 5 \cdot 0.6/10 = 0.3$.