1. Suppose we know a triangle has $A = 54^o$, $b = 9$, $c = 10$,

   Solve the triangle:

   A [B, a, C]=['80.38^o', 5.216, '59.62^o']

   B [B, a, C]=['57.10^o', 8.672, '68.90^o']

   C none of these

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2. Suppose we know a triangle has $c = 12$, $b = 5$, $a = 15$, WHICH application of the LAW of COSINES would result in an equation with only ONE unknown quantity?

   A $b^2 = a^2 + c^2 - 2ab\cos(B)$

   B $c^2 = b^2 + a^2 - 2ba\cos(C)$

   C $b^2 = a^2 + c^2 - 2ac\cos(B)$

   D $c^2 = b^2 + a^2 - 2ba\cos(A)$

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3. Suppose we know a triangle has $A = 32^o$, $c = 44$, $a = 47$, solve the missing items, [b,C^o,B^o],

   A [79.1993, '22.6181^o', '116.382^o']

   B [7.33815, '141.433^o', '6.56740^o'] or [60.5057, '38.5674^o', '109.433^o']

   C [78.1227, '29.7420^o', '118.258^o']

   D [6.41193, '138.308^o', '5.69196^o'] or [63.1635, '41.6919^o', '102.308^o']

   E none of these

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4. Consider the following trigonometric equation

$$\sin(x) = \frac{1}{\sqrt{3}}$$

   A it has the same solutions as the equation $\sin^2(x) = \frac{1}{3}$

   B the equation has no real solutions

   C none of these

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5. Suppose a triangle has sides 5, 2 and $\sqrt{33}$. Find the area of the triangle

   A $2\sqrt{6}$

   B $5\sqrt{6}$

   C $3\sqrt{6}$

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6. Select expressions equivalent to:

$$\tan(x+y)$$

   A
$$\frac{\sin(x+y)}{\cos(x+y)}$$

   B
$$\frac{\sin(x)\cos(y) + \cos(x)\sin(y)}{\cos(x)\cos(y) - \sin(x)\sin(y)}$$

   C
$$\frac{\frac{\sin(x)\cos(y)}{\cos(x)\cos(y)} + \frac{\cos(x)\sin(y)}{\cos(x)\cos(y)}}{\frac{\cos(x)\cos(y)}{\cos(x)\cos(y)} - \frac{\sin(x)\sin(y)}{\cos(x)\cos(y)}}$$

   D none of these

7.

Suppose we know a triangle has $A = 38^o$, $c = 36$, $a = 52$, WHICH application of the LAW of COSINES

would result in an equation with only ONE unknown quantity?

A $c^2 = b^2 + a^2 - 2ba\cos(C)$

B $a^2 = b^2 + c^2 - 2bc\cos(A)$

C $b^2 = a^2 + c^2 - 2ac\cos(B)$

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8. Consider the following trigonometric equation

$$\sin(x) = 4\sin^2(x)$$

A the equation has no real solutions

B it has the same solutions as the equation $1 = 4\sin(x)$

C none of these

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9. Consider the following trigonometric equation

$$\frac{2\sin(x)}{2\cos(x)+1} = \frac{\sqrt{3}}{2}$$

In this equation assume x lies between 0 and 90 degrees. oh and a hint: maybe leave this one for last

A the equation has no real solutions

B the substitution

$$t = \tan\left(\frac{x}{2}\right)$$

is helpful in solving this equation

C the identity

$$\cos^2(x) = 1 - \sin^2(x)$$

is helpful in solving this equation

D $x = 60^o$ is the only solution in the 0 < x < 90 deg range

E none of these

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10. Consider the following trigonometric equation

$$2\cos(3x) - 5 = 0$$

A the equation has infinite many real solutions

B the equation has no real solutions

C the identity

$$\cos(2x) = 2cos^2(x) - 1$$

is helpful in solving this equation

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1) B, 2) BC, 3) C, 4) C, 5) A, 6) ABC, 7) B, 8) C, 9) BCD, 10) B