Pre-Calculus Exam 3 version 1 name:

1. suppose A lies between 0 and 90^o and

$$\sec A + \tan A = 4$$

determine $\cos(A)$

A $\dfrac{5}{11}$

B $\dfrac{5}{13}$

C none of these

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2. Suppose we know a triangle has $A = 36^o$, $b = 23$, $C = 49^o$,

Solve the missing items, $[B^o, a, c]$.

A $[95^o, 6.5940, 0.93994]$

B $[95^o, 13.571, 17.425]$

C no real triangles

D none of these

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3. Suppose we know a triangle has $A = 40^o$, $c = 31$, $a = 43$, solve the missing items, [b,C^o,B^o],

A [75.4541, '14.1224^o', '144.878^o']

B [61.8517, '27.6070^o', '112.393^o']

C [2.28322, '150.294^o', '1.70628^o'] or [64.8208, '29.7063^o', '122.294^o']

D [65.4834, '19.8609^o', '134.139^o']

E none of these

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4. Suppose we know a triangle has $c = 14$, $b = 5$, $a = 12$, 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 $b^2 = a^2+c^2-2ab\cos(B)$

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

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5. Consider the following trigonometric equation

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

A the equation has no real solutions

B the identity

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

is helpful in solving this equation

C none of these

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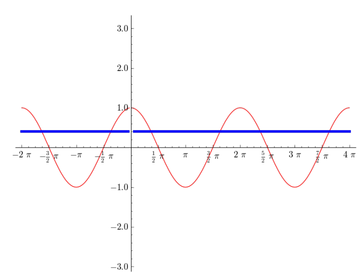
6. One solution to the equation

$\frac{2}{5} = \cos(x)$ is approx 66.422^o

What is the NEXT real solution to the right ?



A $x = 293.58^o$

B $x = 360^o - 66.422^o$

C $x = 156.42^o$

D $x = -113.58^o$

E $x = 246.42^o$

F $x = 66.422 + 180^o$

G none of these

7.

Suppose we know a triangle has $A = 79^o$, $b = 10$, $c = 7$, Solve the triangle:

A $[B, a, C]$=['104.5^o', 6.639, '35.52^o']

B $[B, a, C]$=['25.30^o', 13.00, '18.70^o']

C $[B, a, C]$=['62.58^o', 11.06, '38.42^o']

8. (Assume none of the quantities are zero) Suppose we know

$$\frac{A}{B} = \frac{X}{Y}$$

Select variations of the same statement as above [i.e. equivalent statements.]

A

$$A = \frac{BX}{Y}$$

B A is to B as X is to Y.

C

$$\frac{B}{A} = \frac{Y}{X}$$

D X is to Y as A is to B

E

$$AY = BX$$

F

$$\frac{Y}{X} = \frac{B}{A}$$

G

$$\frac{BX}{A} = Y$$

H none of these

9. Consider the following trigonometric equation

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

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

B the equation has no real solutions

C none of these

10. Consider the following trigonometric equation

$$2\cos(3x) + \cos(2x) + 1 = 0$$

A the equation has no real solutions

B the equation has the same solutions as the equation

$$2(4\cos^3(x) - 3\cos(x)) + 2cos^2(x) - 1 + 1 = 0$$

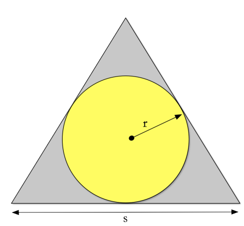
C the identity

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

is helpful in solving this equation

D none of these

11. Suppose a circle is inscribed in an equilateral triangle. Find the radius r if the side is $s = 8$



A $\frac{28}{3}$ B $\frac{8}{2}$ C none of these

12. 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
