NAME:_____

A2.A.77: Apply the double-angle and half-angle formulas for trigonometric functions

1. 010512b, P.I. A2.A.77

If A is a positive acute angle and $\sin A = \frac{\sqrt{5}}{3}$, what is cos *2A*?

[A] $\frac{1}{9}$ [B] $-\frac{1}{3}$ [C] $-\frac{1}{9}$ [D] $\frac{1}{3}$

2. 010418b, P.I. A2.A.77

If x is an acute angle and $\sin x = \frac{12}{13}$, then $\cos 2x$ equals

[A] $\frac{25}{169}$ [B] $-\frac{25}{169}$

[C] $\frac{119}{169}$ [D] $-\frac{119}{169}$

3. 010319b, P.I. A2.A.77

If $\sin\theta = \frac{\sqrt{5}}{3}$, then $\cos 2\theta$ equals

[A] $\frac{1}{3}$ [B] $-\frac{1}{3}$ [C] $-\frac{1}{9}$ [D] $\frac{1}{9}$

4. fall9905b, P.I. A2.A.77

If x is an acute angle, and $\cos x = \frac{4}{5}$, then $\cos 2x$ is equal to

[A] $\frac{7}{25}$ [B] $\frac{6}{25}$ [C] $\frac{-1}{25}$ [D] $\frac{2}{25}$

5. 060413b, P.I. A2.A.77

If θ is an acute angle such that $\sin\theta = \frac{5}{13}$, what is the value of $\sin 2\theta$?

[A] $\frac{10}{26}$ [B] $\frac{120}{169}$ [C] $\frac{60}{169}$ [D] $\frac{12}{13}$

6. 060604b, P.I. A2.A.77

If x is a positive acute angle and $\sin x = \frac{1}{2}$, what is $\sin 2x$?

[A] $\frac{1}{2}$ [B] $-\frac{1}{2}$ [C] $-\frac{\sqrt{3}}{2}$ [D] $\frac{\sqrt{3}}{2}$

7. 010609b, P.I. A2.A.77
If θ is a positive acute angle and $\sin 2\theta = \frac{\sqrt{3}}{2}$, then $(\cos\theta + \sin\theta)^2$ equals

[A] $1+\frac{\sqrt{3}}{2}$ [B] 1 [C] 60° [D] 30°

8. 060914b, P.I. A2.A.77
The expression $\frac{\sin 2A}{2\cos A}$ is equivalent to

[A] $\frac{1}{2}\sin A$ [B] $\cos A$

[C] $\sin A$ [D] $\tan A$

9. 080617b, P.I. A2.A.77
The expression $\frac{\sin 2\theta}{\sin^2\theta}$ is equivalent to

[A] $2\cot\theta$ [B] $2\tan\theta$

[C] $\frac{2}{\sin\theta}$ [D] $2\cos\theta$

10. 080315b, P.I. A2.A.77
The expression $\frac{2\cos\theta}{\sin 2\theta}$ is equivalent to

[A] cot θ [B] sin θ

[C] csc θ [D] sec θ

11. 060118b, P.I. A2.A.77
If θ is an obtuse angle and $\sin\theta = b$, then it can be concluded that

[A] $\cos\theta > b$ [B] $\sin 2\theta < b$

[C] $\tan\theta > b$ [D] $\cos 2\theta > b$

12. 060222b, P.I. A2.A.77
Is $\frac{1}{2}\sin 2x$ the same expression as $\sin x$?
Justify your answer.

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[1] C

[2] D

[3] C

[4] A

[5] B

[6] D

[7] A

[8] C

[9] A

[10] C

[11] B

[12] [2] No, and appropriate work is shown, such as setting the expressions equal to each other, with one trial showing that the two expressions are not always equal.
[1] Yes, but appropriate work is shown, such as using 0° and 180° as trials.
[0] No or yes, and no work or incorrect work is shown.
or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.