TB(3B) Ch.9 Trigonometric Relations
Multiple Choice Questions

1. **[16-17 Standardized Test #6]**

   $\sin^2 10° + \sin^2 20° + \sin^2 30° + ... + \sin^2 80° =$

   A.   4.   **B.** 4.5.

   C.   8.   **D.** 8.5.

2. **[16-17 Final Exam #9]**

   $\dfrac{\cos(90° - \theta)\sin(90° - \theta)}{\tan\theta} =$

   A. $\sin\theta$.   **B.** $\cos\theta$.
   C. $\sin^2\theta$.   **D.** $\cos^2\theta$.

3. **[16-17 Final Exam #10]**

   $1 - \sin^2\theta + \tan^2\theta\cos^2\theta =$

   A. $\tan^2\theta$.   **B.** $\cos^2\theta$.
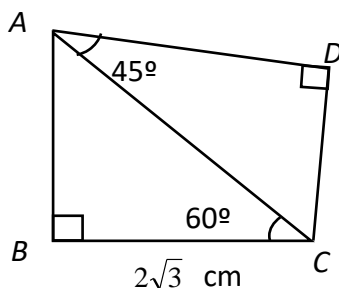   **C.** $\sin^2\theta$.   **D.**   1.

4. **[17-18 Standardized Test 2 #6]**

   $\dfrac{\tan 30°}{\cos 30° \sin 45°} =$

   A. $\dfrac{4\sqrt{3}}{9}$.

   B. $\dfrac{2\sqrt{2}}{3}$.

   C. $2\sqrt{2}$.
   D. $2\sqrt{6}$.

5. **[17-18 Standardized Test 2 #7]**

   In the figure, find the area of the quadrilateral *ABCD*.

   A. $(2\sqrt{3} + 4)\,\mathrm{cm}^2$
   B. $(2\sqrt{3} + 12)\,\mathrm{cm}^2$
   C. $(6\sqrt{3} + 12)\,\mathrm{cm}^2$
   D. $(6\sqrt{3} + 24)\,\mathrm{cm}^2$

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6. **[17-18 Final Exam #8]**

    $$\left(\frac{\cos \theta}{\tan \theta} - \frac{1}{\sin \theta} \right)^2 =$$

    A. 1.

    B. $\sin^2 \theta$.

    C. $-\sin^2 \theta$.

    D. $\dfrac{1}{\sin^2 \theta}$.

7. **[17-18 Final Exam #19]**

    Which of the following are correct?

    I. $\dfrac{1}{\tan(90° - \theta)} \equiv \dfrac{\sin \theta}{\cos \theta}$

    II. $\cos^3 \theta - \cos \theta \equiv -\cos \theta \sin^2 \theta$

    III. $1 - 2\cos^2 \theta + \cos^4 \theta \equiv \sin^2 \theta \cos^2 \theta \tan^2 \theta$

    A. I and II only
    B. I and III only
    C. II and III only
    D. I, II and III

8. **[18-19 Standardized Test 2 #5]**

    If $\tan \theta = \dfrac{1}{3}$, find $\dfrac{5\sin \theta + 4\cos \theta}{3\sin \theta - 2\cos \theta}$.

    A. -3

    B. $-\dfrac{17}{6}$

    C. $-\dfrac{17}{3}$

    D. $\dfrac{17}{3}$

9. **[18-19 Standardized Test 2 #8]**

   If θ is an acute angle, which of the following are correct?

   I. $\cos^2\theta - \sin^2\theta \equiv 1 - 2\sin^2\theta$

   II. $\tan(90° - \theta) + \tan\theta \equiv \dfrac{1}{\sin\theta\cos\theta}$

   III. $\sin(90° - \theta)\cos(90° - \theta)\tan^2(90° - \theta) \equiv \dfrac{\cos\theta - \cos\theta\sin^2\theta}{\sin\theta}$

   A. I and II only
   B. I and III only
   C. II and III only
   D. I, II and III

10. **[18-19 Final Exam #10]**

    If $\cos\theta = \dfrac{5}{13}$ and θ is an acute angle, find the value of $\sin\theta + \tan(90° - \theta)$.

    A. $\dfrac{125}{156}$

    B. $\dfrac{17}{13}$
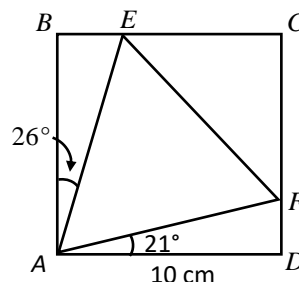
    C. $\dfrac{209}{156}$

    D. $\dfrac{216}{65}$

11. **[18-19 Final Exam #19]**

    In a right-angled ΔABC, if $\cos\angle A = \cos\angle B$, find the value of $\tan\angle B$.

    A. $\dfrac{1}{\sqrt{3}}$

    B. 1

    C. $\sqrt{3}$

    D. Undefined

12. **[18-19 Final Exam #20]**

    In the figure, $ABCD$ is a square with side 10 cm. E and F lie on BC and CD respectively. If $\angle BAE = 26°$ and $\angle DAF = 21°$, find the value of $\angle CEF$ correct to 3 significant figures.
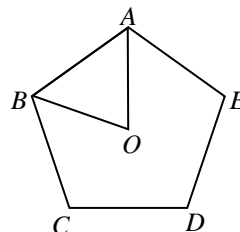
    A. $38.2°$

    B. $39.7°$

    C. $50.3°$

    D. $51.8°$

13. [18-19 Final Exam #21]

In the figure, *ABCDE* is a regular pentagon. *O* is the centre of the pentagon. If   *OA* = 8 cm,

find the area of pentagon *ABCDE* correct to 3 significant figures.

A.   129 cm^2.

B.   152 cm^2.

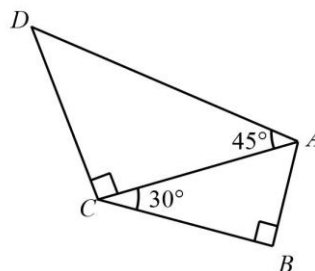C.   259 cm^2.

D.   304 cm^2.

14. [20-21 Final Exam #9]

Find the acute angle θ in $\sin\theta = \cos 64°$.

A. 26°

B. 36°

C. 46°

D. 64°

15. [20-21 Final Exam #12]

In the figure, $\angle ABC = \angle DCA = 90°$, $\angle DAC = 45°$ and
$\angle ACB = 30°$. If *AB* = 3 cm, then *CD* =

A. $6\sqrt{2}$ cm.

B. 6 cm.

C. $3\sqrt{3}$ cm.

D. $3\sqrt{2}$ cm.

16. [20-21 Final Exam #18]

Which of the following is/are an identity/identities?

I. $\sin^2 x = 1 - \sin^2(90° - x)$

II. $2\tan x = \tan 2x$

III. $(\sin x + \cos x)^2 = 1$

A.   I only

B.   II only

C.   I and III only

D.   II and III only