Name: _____

F.TF.B.7: Trigonometric Equations 2

1 Which value of x does *not* satisfy the equation $\sin^2 x + \sin x = 0$?

1) $\dfrac{\pi}{2}$ 2) 2π 3) $\dfrac{3}{2}\pi$ 4) π

2 Which is a solution for the equation $\sin^2 \theta + 4\sin \theta = 0$?

1) $\dfrac{\pi}{6}$ 2) $\dfrac{\pi}{2}$ 3) π 4) $\dfrac{3\pi}{2}$

3 Which value of θ satisfies the equation $2\cos^2 \theta - \cos \theta = 0$?

1) $\dfrac{\pi}{3}$ 2) $\dfrac{\pi}{4}$ 3) $\dfrac{\pi}{6}$ 4) 0

4 Which value of θ satisfies the equation $2\sin^2 \theta - 5\sin \theta - 3 = 0$?
1) $300°$ 2) $210°$ 3) $150°$ 4) $30°$

5 What is a positive value of x for which $9^{-\cos x} = \dfrac{1}{3}$?

1) $30°$ 2) $45°$ 3) $60°$ 4) $90°$

6 In the interval $0° \le \theta < 360°$, how many values of θ satisfy the equation $\sin^2 \theta = \dfrac{1}{4}$?

1) 1 2) 2 3) 3 4) 4

7 If θ is an angle in Quadrant I and $\tan^2 \theta - 4 = 0$, what is the value of θ to the *nearest degree*?
1) 1 2) 2 3) 63 4) 75

8 In the interval $0 \le x \le 2\pi$, the solutions of the equation $\sin^2 x = \sin x$ are

1) $0, \dfrac{\pi}{2}, \pi$ 2) $\dfrac{\pi}{2}, \dfrac{3\pi}{2}$ 3) $0, \dfrac{\pi}{2}, \dfrac{3\pi}{2}$

4) $\dfrac{\pi}{2}, \pi, \dfrac{3\pi}{2}$

9 In the interval $0° \le \theta \le 360°$, how many values of θ satisfy the equation $3\sin^2 \theta + \sin \theta - 2 = 0$?
1) 1 2) 2 3) 3 4) 4

10 Which values of x in the interval $0° \le x < 360°$ satisfy the equation $2\sin^2 x + \sin x - 1 = 0$?
1) $\{30°, 270°\}$ 2) $\{30°, 150°, 270°\}$
3) $\{90°, 210°, 330°\}$ 4) $\{90°, 210°, 270°, 330°\}$

11 In the interval $0° \le \theta \le 360°$, how many values of θ satisfy the equation $\tan^2 \theta - 3\tan \theta + 2 = 0$?
1) 1 2) 2 3) 3 4) 4

12 What is the total number of solutions for the equation $3\tan^2 A + \tan A - 2 = 0$ in the interval $0 \le A \le \pi$?
1) 1 2) 2 3) 3 4) 4

13 If $0° < \theta < 360°$, the solutions of the equation $9^{\sin \theta} = 3$ are $30°$ and
1) $150°$ 2) $210°$ 3) $320°$ 4) $330°$

F.TF.B.7: Trigonometric Equations 2
Answer Section

  1 ANS: 1   REF: 088929siii
  2 ANS: 3   REF: 088425siii
  3 ANS: 1   REF: 080023siii
  4 ANS: 2   REF: 069930siii
  5 ANS: 3

$$9^{-\cos x} = \frac{1}{3}$$

$$\log 9^{-\cos x} = \log \frac{1}{3}$$

$$-\cos x \log 9 = \log \frac{1}{3}$$

$$-\cos x = \frac{\log \frac{1}{3}}{\log 9}$$

$$-\cos x = -\frac{1}{2}$$
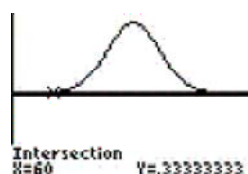
$$\cos x = \frac{1}{2}$$

$$x = \cos^{-1}\left(\frac{1}{2}\right)$$

$$x = 60°$$

Plot1 Plot2 Plot3
\Y1◼9^-cos(X)
\Y2◼1/3
\Y3=
\Y4=
\Y5=
\Y6=
\Y7=

Intersection
X=60   Y=.33333333

    REF: 010404b
  6 ANS: 4   REF: 088732siii
  7 ANS: 3   REF: 019919siii
  8 ANS: 1   REF: 019528siii
  9 ANS: 3   REF: 068033siii
10 ANS: 2

$$(2\sin x - 1)(\sin x + 1) = 0$$

$$\sin x = \frac{1}{2}, -1$$

$$x = 30, 150, 270$$

    REF: 081514a2
11 ANS: 4   REF: 018434siii
12 ANS: 2   REF: 069027siii
13 ANS: 1   REF: 010325siii