F.IF.B.4: Graphing Trigonometric Functions 2

1 What is the minimum value of $f(\theta)$ in the equation $f(\theta) = 3\sin 4\theta$?
   1) −1
   2) −2
   3) −3
   4) −4

2 The maximum value of the function $y = 3\sin 2x$ is
   1) π
   2) 2
   3) 3
   4) 2π

3 What is the maximum value for the function $y = \frac{1}{3}\sin 5x$ is:
   1) $-\frac{1}{3}$
   2) $\frac{1}{3}$
   3) $\frac{1}{5}$
   4) −5

4 What is the maximum value of y for the equation $y = 1 + 3\sin x$?
   1) 1
   2) 2
   3) 3
   4) 4

5 If $f(x) = 2\sin 3x + C$, then the maximum value of $f(x)$ is:
   1) C
   2) $C + 2$
   3) $C + 3$
   4) $C + 6$

6 The path traveled by a roller coaster is modeled by the equation $y = 27\sin 13x + 30$. What is the maximum altitude of the roller coaster?
   1) 13
   2) 27
   3) 30
   4) 57

7 What is the range of the function $y = 4\cos x$?
   1) $-1 \le y \le 1$
   2) $-4 \le y \le 4$
   3) $y \ge 0$
   4) $y \le 4$

8 What is the range of the function $y = 2\cos 3x$?
   1) $-1 \le y \le 1$
   2) $-2 \le y \le 2$
   3) $-3 \le y \le 3$
   4) $-\frac{3}{2} \le y \le \frac{3}{2}$

9 What is the range of the function $y = 2\sin 3x$?
   1) all real numbers
   2) $-1 \le y \le 1$
   3) $-2 \le y \le 2$
   4) $-3 \le y \le 3$

10 Which is *not* in the range of the function $y = \cos x$?
   1) 1
   2) 2
   3) $\frac{1}{2}$
   4) $-\frac{1}{2}$

11 Which number is *not* an element of the range of $y = \sin x$?
1) 1
2) 2
3) −1
4) 0

12 Which transformation could be used to make the graph of the equation $y = \sin x$ coincide with the graph of the equation $y = \cos x$?
1) translation
2) rotation
3) dilation
4) point reflection

13 The graph of which equation is symmetric with respect to the origin?
1) $y = -3$
2) $x = 2$
3) $y = \sin x$
4) $y = \cos x$

14 Which type of symmetry does the equation $y = \cos x$ have?
1) line symmetry with respect to the *x*-axis
2) line symmetry with respect to $y = x$
3) point symmetry with respect to the origin
4) point symmetry with respect to $\left(\dfrac{\pi}{2}, 0 \right)$

15 As angle *x* increases from 180° to 270°, the value of $\cos x$ will
1) increase from 0 to 1
2) increase from −1 to 0
3) decrease from 0 to −1
4) decrease from 1 to 0

16 As angle θ increases from π radians to 2π radians, the cosine of θ
1) increases throughout the interval
2) decreases throughout the interval
3) increases, then decreases
4) decreases, then increases

17 As θ increases from $\dfrac{\pi}{2}$ to $\dfrac{3\pi}{2}$, the value of $\cos \theta$
1) decreases, only
2) increases, only
3) decreases and then increases
4) increases and then decreases

18 As angle *x* increases from $\dfrac{\pi}{2}$ to π, the value of $\sin x$ will
1) increase from −1 to 0
2) increase from 0 to 1
3) decrease from 0 to −1
4) decrease from 1 to 0

19 As *x* increases from π to 2π, the value of $\sin x$
1) increases, only
2) decreases, only
3) increases, then decreases
4) decreases, then increases

20 As θ increases from π to $\dfrac{3\pi}{2}$, which statement is true?
1) $\sin \theta$ increases from −1 to 0.
2) $\sin \theta$ decreases from 1 to 0.
3) $\cos \theta$ decreases from 0 to −1.
4) $\cos \theta$ increases from −1 to 0.

21 The graph of the equation $y = |\sin x|$ will contain *no* points in Quadrants
1) I and II
2) II and III
3) III and IV
4) I and IV

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Answer Section

1 ANS: 3   REF: 018935siii
2 ANS: 3   REF: 068125siii
3 ANS: 2   REF: 089420siii
4 ANS: 4   REF: 019033siii
5 ANS: 2
The maximum of a sine wave is 1. $2(1) + C = C + 2$.

REF: fall9919b
6 ANS: 4
The maximum of a sine wave is 1. $27(1) + 30 = 57$.

REF: 080419b
7 ANS: 2   REF: 060324siii
8 ANS: 2   REF: 069429siii
9 ANS: 3   REF: 010125siii
10 ANS: 2   REF: 018420siii
11 ANS: 2   REF: 019617siii
12 ANS: 1   REF: 010711b
13 ANS: 3   REF: 018929siii
14 ANS: 4   REF: 010216b
15 ANS: 2   REF: 068121siii
16 ANS: 1   REF: 060129siii
17 ANS: 3   REF: 089029siii
18 ANS: 4   REF: 060020siii
19 ANS: 4   REF: 080029siii
20 ANS: 4   REF: 068524siii
21 ANS: 3   REF: 080903b