

## 32-Mavzu. Trigonometriya

- Agar  $\operatorname{tg}x=0,5$  bo'lsa,  $\cos^8x-\sin^8x$  qiymatini toping.  
A) 0,52 B) 0,408 C) 0,392 D) 0,416
- Soddalashtiring:  $\cos \alpha \cos \frac{\alpha}{2} + \sin \alpha \sin \frac{\alpha}{2}$   
A)  $\sin \alpha$  B)  $\sin \frac{\alpha}{2}$  C)  $\cos \alpha$  D)  $\cos \frac{\alpha}{2}$
- Hisoblang:  $(\operatorname{tg} 60^\circ \cos 15^\circ - \sin 15^\circ) \cdot 7\sqrt{2}$   
A) 16 B) 12 C) 14 D) 10
- Hisoblang:  $(1 + \operatorname{tg} 14^\circ)(1 + \operatorname{tg} 31^\circ)$   
A) 1 B) 2 C) 4 D) 8
- Ifodani soddalashtiring:  $\sin \alpha + \sin \left(\alpha + \frac{2\pi}{3}\right) + \sin \left(\alpha + \frac{4\pi}{3}\right)$   
A) 0 B) 1 C)  $1 + \sin \alpha$  D)  $\sin \alpha$
- Ifodani soddalashtiring:  $\sin^2 \left(\frac{\pi}{3} + x\right) + \sin^2 \left(\frac{\pi}{3} - x\right) + \sin^2 x$   
A) 1,5 B) 0,5 C) 2,5 D) 1
- Agar  $\begin{cases} \operatorname{tg} \alpha = \frac{3+\sqrt{x}}{2} \\ \operatorname{tg} \beta = \frac{3-\sqrt{x}}{2} \\ \alpha + \beta = \frac{\pi}{4} \end{cases}$  bo'lsa,  $x$  ni toping.  
A)  $60^\circ$  B) -17 C) 41 D) 17
- $\alpha = \frac{\pi}{12}$  va  $\alpha = \frac{\pi}{4}$  bo'lganda,  $(\cos \alpha + \cos \beta)^2 + (\sin \alpha - \sin \beta)^2$  ifodaning qiymati nechaga teng?  
A)  $\frac{3}{2}$  B) 2 C)  $\frac{5}{2}$  D) 3
- $\frac{\operatorname{tg}(\alpha+\beta)-\operatorname{tg}\alpha-\operatorname{tg}\beta}{\operatorname{tg}\beta \cdot \operatorname{tg}(\alpha+\beta)}$  ifodaning son qiymatini toping. Bu yerda  $\alpha = \frac{2\pi}{3}, \beta = \frac{3\pi}{5}$ .  
A) -1 B)  $-\sqrt{3}$  C)  $\sqrt{3}$  D) 1
- Soddalashtiring:  $\operatorname{tg} \alpha \cdot \operatorname{tg} \beta - (\operatorname{tg} \alpha - \operatorname{tg} \beta) \cdot \operatorname{ctg}(\alpha - \beta)$   
A) 1 B) -1 C) 2 D) 0

11.  $\operatorname{tg}(\alpha + \beta) = 4, \operatorname{tg}(\alpha - \beta) = -2$  bo'lsa,  $\operatorname{tg}2\beta$  ni hisoblang.

- A)  $\frac{2}{3}$    B)  $-\frac{7}{5}$    C)  $\frac{3}{2}$    D)  $-\frac{6}{7}$

12. Soddashtiring:  $\frac{2}{\operatorname{tg}\alpha + \operatorname{ctg}\alpha}$

- A)  $\cos 2\alpha$    B)  $\frac{1}{\cos 2\alpha}$    C)  $\frac{1}{\sin 2\alpha}$    D)  $\sin 2\alpha$

13. Ifodani soddashtiring:  $\frac{2\cos^2\alpha}{\sin 2\alpha}$ .

- A) 2   B)  $\cos\alpha$    C)  $\operatorname{tg}\alpha$    D)  $\operatorname{ctg}\alpha$

14. Soddashtiring:  $\frac{\sin 3\alpha}{\sin\alpha} - \frac{\cos 3\alpha}{\cos\alpha}$

- A)  $4\cos 2\alpha$    B) 2   C)  $2\cos 2\alpha$    D)  $\sin 2\alpha$

15. Soddashtiring:  $\frac{3\operatorname{tg}x - \operatorname{tg}^3x}{1 - 3\operatorname{tg}^2x} \cdot \operatorname{ctg}3x$

- A) 2   B) -1   C) 1   D) 0

16.  $8\sin^2\frac{25\pi}{24} \cdot \cos^2\frac{23\pi}{24} - 1$  ni hisoblang.

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

17. Hisoblang:  $\sin^6\frac{\pi}{8} - \cos^6\frac{7\pi}{8}$

- A)  $-\frac{5}{8}$    B)  $\frac{5}{8}$    C)  $\frac{7\sqrt{2}}{16}$    D)  $-\frac{7\sqrt{2}}{16}$

18. Hisoblang:  $\frac{\sin 60^\circ}{\sin 20^\circ} - 2 \cdot \cos 40^\circ$

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

19. Ifodani soddashtiring:  $2\cos 20^\circ \cos 40^\circ - \cos 20^\circ$

- A) -1   B)  $-\frac{1}{2}$    C)  $\frac{1}{2}$    D) 1

20. Agar  $12 \cdot \sin 5^\circ \cdot \cos 5^\circ \cdot \cos 10^\circ = m$  ekanligi ma'lum bo'lsa,  $\operatorname{tg}70^\circ$  ni  $m$  orqali ifodalang.

- A)  $\frac{\sqrt{9-m^2}}{3}$    B)  $\frac{\sqrt{9-m^2}}{9m}$    C)  $\frac{\sqrt{9-m^2}}{m}$    D)  $\frac{\sqrt{3-m^2}}{m}$

21. Agar  $\operatorname{ctg}\alpha = -\frac{1}{3}$  bo'lsa,  $\operatorname{tg}3\alpha$  ning qiymatini toping.

- A)  $-\frac{9}{13}$    B)  $-\frac{1}{11}$    C)  $-\frac{2}{11}$    D) 5

22. Hisoblang:  $\frac{1}{\sin 10^\circ} - \frac{\sqrt{3}}{\cos 10^\circ}$   
 A) 1 B) 2 C) 3 D) 4
23. Hisoblang:  $\frac{1}{\cos 290^\circ} + \frac{1}{\sqrt{3} \sin 290^\circ}$   
 A)  $\frac{2}{\sqrt{3}}$  B)  $-\frac{2}{\sqrt{3}}$  C)  $\frac{4}{\sqrt{3}}$  D)  $-\frac{4}{\sqrt{3}}$
24.  $\operatorname{tg}\alpha=2$  bo'lsa,  $\frac{2}{3+4\cos 2\alpha}$  ning qiymatini toping.  
 A)  $-3\frac{1}{3}$  B)  $-\frac{10}{27}$  C)  $\frac{10}{27}$  D)  $3\frac{1}{3}$
25. Agar  $\operatorname{tg}\alpha = -\frac{1}{4}$  bo'lsa,  $\frac{2\cos^2\alpha - \sin 2\alpha}{2\sin^2\alpha - \sin 2\alpha}$  ni hisoblang.  
 A) -4 B)  $\frac{1}{4}$  C) 4 D)  $-\frac{1}{2}$
26. Agar  $\operatorname{tg}4\alpha = -\frac{1}{2}$  bo'lsa,  $\operatorname{ctg}\alpha - \operatorname{tg}\alpha - 2\operatorname{tg}2\alpha$  ning qiymatini toping.  
 A) 2 B) -2 C) 8 D) -8
27. Qandaydir  $a, b, c$  sonlar uchun  
 $\cos 4x = a \cos^4 x + b \cos^2 x + c$  ayniyat bajarilsa,  $b$  ni toping.  
 A) 8 B) 4 C) -8 D) -4
28. Hisoblang:  $\frac{\sin 80^\circ + \cos 50^\circ + 3\sqrt{2}}{\sin 50^\circ + \sin 10^\circ + \sqrt{6}}$   
 A)  $\frac{\sqrt{3}}{3}$  B)  $\sqrt{3}$  C)  $\sqrt{2}$  D) 1
29. Soddalashtiring:  
 $(\sin 115^\circ + \sin 25^\circ) \cdot (\sin 65^\circ + \sin 155^\circ) + (\sin 25^\circ - \sin 115^\circ) \cdot (\sin 155^\circ - \sin 65^\circ)$   
 A)  $\sin 50^\circ$  B)  $\sin 40^\circ$  C)  $\sqrt{2}$  D) 2
30. Ifodani soddalashtiring:  $\frac{1}{2}(\cos \alpha - \cos \beta)^2 + \frac{1}{2}(\sin \alpha - \sin \beta)^2 - 2 \sin^2 \frac{\alpha - \beta}{2}$   
 A)  $4 \sin^2 \frac{\alpha - \beta}{2}$  B) 1 C) 0 D)  $4 \sin \frac{\alpha - \beta}{2}$
31. Ifodani soddalashtiring:  $(2(\sin \alpha)^{-1} + 2(\operatorname{tg}\alpha)^{-1}) : \left(\operatorname{tg} \frac{\alpha}{2}\right)^{-1}$   
 A)  $\operatorname{tg} \frac{\alpha}{2}$  B) 4 C)  $\operatorname{ctg} \frac{\alpha}{2}$  D) 2

32. Quyidagi formulalardan qaysilari to‘g‘ri?

1)  $\sin(x - y) = \sin x \cos y - \cos x \sin y$

2)  $\sin^2 \frac{x}{2} = \frac{1 + \cos x}{2}$

3)  $\sin x + \sin y = 2 \sin \frac{x+y}{2} \cos \frac{x-y}{2}$

4)  $\operatorname{tg} x + \operatorname{tg} y = \frac{\sin(x+y)}{\cos x \cos y}, x, y \neq \frac{\pi}{2} + \pi n, n \in \mathbb{Z}.$

A) 1;2;4    B) 2;3;4    C) 1;3;4    D) 1;2;3

33. Ifodani soddalashtiring:  $\sqrt{\frac{1}{2} + \frac{1}{2} \cdot \sqrt{\frac{1}{2} + \frac{1}{2} \cos \alpha}} \quad (\pi < \alpha < 2\pi)$

A)  $\sin \frac{\alpha}{4}$     B)  $\cos \frac{\alpha}{2}$     C)  $\cos \frac{\alpha}{2}$     D)  $\cos \frac{\alpha}{4}$

34.  $\cos^2 84^\circ + \cos^2 36^\circ + \cos 84^\circ \cos 36^\circ$  ni soddalashtiring

A)  $\frac{1}{2}$     B)  $\frac{3}{4}$     C)  $\frac{2}{3}$     D)  $\frac{1}{4}$

35.  $2 \sin 43^\circ \cos 17^\circ + 2 \sin^2 32^\circ - 1$  ni hisoblang

A)  $\frac{\sqrt{2}}{2}$     B)  $\frac{1}{2}$     C) 1    D)  $\frac{\sqrt{3}}{2}$

36.  $\frac{\sin 4\alpha + 2\cos 2\alpha \cdot \cos 4\alpha}{1 - \sin 2\alpha - \cos 4\alpha + \sin 6\alpha}$  ni soddalashtiring

A)  $2\sin 2\alpha$     B)  $2\operatorname{tg} 2\alpha$     C)  $\operatorname{ctg} 2\alpha$     D)  $4\operatorname{tg} 2\alpha$

37.  $\frac{2\cos^2 \frac{\alpha}{2}}{\operatorname{ctg} \frac{\alpha}{4} - \operatorname{tg} \frac{\alpha}{4}}$  ni soddalashtiring.

A)  $\cos \alpha$     B)  $-\sin \alpha$     C)  $\frac{1}{2} \sin \alpha$     D)  $\sin \alpha$

38.  $\frac{1 + \sin 4\alpha}{\sin 2\alpha + \cos 2\alpha} - \cos 2\alpha$  ni soddalashtiring.

A)  $\sin 2\alpha$     B)  $\cos 2\alpha$     C)  $-2 \sin 2\alpha$     D)  $-\cos 2\alpha$

39. Toq funksiyani aniqlang.

1)  $f(x) = \lg(x + \sqrt{1 + x^2})$ ; 2)  $f(x) = \frac{2^x - 1}{2^x + 1}$ ; 3)  $f(x) = \sin(x + 2) + \sin(x - 2).$

A) 3    B) 1, 2    C) 2, 3    D) 1, 2, 3

40. Agar  $0 < \alpha, \beta < \frac{\pi}{2}$ ,  $\operatorname{tg} \alpha = \frac{\sqrt{3 - \sqrt{3}} \cdot \sqrt{3}}{4 - \sqrt{3 - \sqrt{3}}}$  va  $\operatorname{tg} \beta = \frac{\sqrt{3 - \sqrt{3}} - 1}{\sqrt{3}}$  bo‘lsa,  $\alpha - \beta$  ni toping.

A)  $\frac{\pi}{3}$     B)  $\frac{\pi}{12}$     C)  $\frac{\pi}{4}$     D)  $\frac{\pi}{6}$

**Kalitlar**

1.	B	16.	B	31.	D
2.	D	17.	D	32.	C
3.	C	18.	A	33.	A
4.	B	19.	C	34.	B
5.	A	20.	C	35.	D
6.	A	21.	A	36.	C
7.	D	22.	D	37.	C
8.	D	23.	C	38.	A
9.	B	24.	D	39.	D
10.	B	25.	C	40.	A
11.	D	26.	D		
12.	D	27.	C		
13.	D	28.	B		
14.	B	29.	D		
15.	C	30.	C		