

RUMUS-RUMUS TRIGONOMETRI

SOAL LATIHAN 01

A. Rumus Jumlah dan Selisih Dua Sudut

01. Nilai dari $\sin 15^\circ = \dots$

- A. $\frac{1}{4}(\sqrt{2} - \sqrt{6})$ B. $\frac{1}{4}(\sqrt{6} - \sqrt{2})$ C. $\frac{1}{4}(\sqrt{2} + \sqrt{6})$
D. $\frac{1}{2}(\sqrt{2} + \sqrt{6})$ E. $\frac{1}{2}(\sqrt{2} - 6)$

02. Nilai dari $\cos 75^\circ = \dots$

- A. $\frac{1}{4}(\sqrt{2} - \sqrt{6})$ B. $\frac{1}{4}(\sqrt{6} - \sqrt{2})$ C. $\frac{1}{4}(\sqrt{2} + \sqrt{6})$
D. $\frac{1}{2}(\sqrt{2} + \sqrt{6})$ E. $\frac{1}{2}(\sqrt{2} - 6)$

03. Nilai dari $\sin 285^\circ = \dots$

- A. $\frac{1}{4}(\sqrt{2} - \sqrt{6})$ B. $\frac{1}{4}(\sqrt{6} - \sqrt{2})$ C. $\frac{1}{4}(\sqrt{2} + \sqrt{6})$
D. $-\frac{1}{4}(\sqrt{2} + \sqrt{6})$ E. $\frac{1}{2}(\sqrt{2} - 6)$

04. Nilai dari $\cos 345^\circ = \dots$

- A. $\frac{1}{4}(\sqrt{2} - \sqrt{6})$ B. $\frac{1}{4}(\sqrt{6} - \sqrt{2})$ C. $\frac{1}{4}(\sqrt{2} + \sqrt{6})$
D. $\frac{1}{2}(\sqrt{2} + \sqrt{6})$ E. $\frac{1}{2}(\sqrt{2} - \sqrt{6})$

05. Nilai dari $\csc 195^\circ = \dots$

- A. $(\sqrt{6} - \sqrt{2})$ B. $(\sqrt{6} + \sqrt{2})$ C. $(\sqrt{2} - \sqrt{6})$
D. $-(\sqrt{6} + \sqrt{2})$ E. $\frac{1}{2}(\sqrt{6} - \sqrt{2})$

06. Nilai dari $\sec 345^\circ = \dots$

- A. $(\sqrt{6} - \sqrt{2})$ B. $(\sqrt{6} + \sqrt{2})$ C. $(\sqrt{2} - \sqrt{6})$
D. $-(\sqrt{6} + \sqrt{2})$ E. $\frac{1}{2}(\sqrt{6} - \sqrt{2})$

07. Nilai dari $\tan 195^\circ = \dots$

- A. $2 + \sqrt{3}$ B. $2 - \sqrt{3}$ C. $\sqrt{3} - 2$
D. $-(2 + \sqrt{3})$ E. $\frac{1}{2}(2 + \sqrt{3})$

08. Nilai dari $\cot 345^\circ = \dots$

- A. $2 + \sqrt{3}$ B. $2 - \sqrt{3}$ C. $\sqrt{3} - 2$
D. $-(2 + \sqrt{3})$ E. $\frac{1}{2}(2 + \sqrt{3})$

09. Diketahui $\sin \alpha = 3/5$ dan $\cos \beta = 12/13$ dengan α sudut tumpul dan β sudut lancip. Nilai dari $\sin (\alpha + \beta) = \dots$

- A. $16/63$ B. $-16/63$ C. $16/65$
D. $-16/65$ E. $56/65$

10. Diketahui $\sin \alpha = -12/13$ dan $\cos \beta = -4/5$ dengan α dikuadran ke III dan β di kuadran ke II. Nilai dari $\cos (\alpha - \beta) = \dots$

- A. $56/65$ B. $-56/65$ C. $16/65$
D. $-16/65$ E. $12/65$

11. Diketahui $\sin \alpha = 5/13$ dan $\sin \beta = -4/5$ dimana $90^\circ < \alpha < 180^\circ$ dan $270^\circ < \beta < 360^\circ$ Nilai dari $\tan (\alpha + \beta) = \dots$

- A. $42/16$ B. $63/16$ C. $-63/16$
D. $33/56$ E. $-21/8$

12. Nilai $\frac{\tan \alpha + \tan \beta}{\tan \alpha - \tan \beta}$ setara dengan ...

- A. $\frac{\sin (\alpha + \beta)}{\cos (\alpha - \beta)}$ B. $\frac{\sin (\alpha - \beta)}{\cos (\alpha + \beta)}$ C. $\frac{\sin (\alpha + \beta)}{\sin (\alpha - \beta)}$
D. $\frac{\cos (\alpha + \beta)}{\cos (\alpha - \beta)}$ E. $\frac{\sin (\alpha - \beta)}{\sin (\alpha + \beta)}$

13. Nilai dari $\frac{\cos (\alpha + \beta)}{\cos \alpha \cdot \cos \beta}$ setara dengan ...

- A. $1 + \sin \alpha \cdot \cos \beta$ B. $1 - \sin \alpha \cdot \sin \beta$ C. $1 + \tan \alpha \cdot \tan \beta$
D. $1 - \tan \alpha \cdot \tan \beta$ E. $1 + \cos \alpha \cdot \cos \beta$

14. $\sin \alpha + \sin (\alpha + 120^\circ) + \cos (210^\circ - \alpha) =$

- A. 0 B. 1 C. 2
D. 3 E. 4

15. Nilai $\tan(45^\circ + \alpha)$ setara dengan ...

- A. $\frac{\cos\alpha - \sin\alpha}{\cos\alpha + \sin\alpha}$ B. $\frac{\cos\alpha + \sin\alpha}{\cos\alpha - \sin\alpha}$ C. $\frac{\sin\alpha - \cos\alpha}{\sin\alpha + \cos\alpha}$
D. $\frac{\sin\alpha + \cos\alpha}{\sin\alpha - \cos\alpha}$ E. $\frac{\sin\alpha}{\sin\alpha + \cos\alpha}$

16. Jika $3 \cdot \cos(\alpha + \beta) = \cos(\alpha - \beta)$ maka nilai $\tan\alpha \cdot \tan\beta = \dots$

- A. $-3/2$ B. $3/2$ C. $1/2$
D. $-1/2$ E. 2

17. Jika $m = \sin A + \sin B$ dan $n = \cos A + \cos B$ maka nilai $m^2 + n^2 = \dots$

- A. $2 + 2\sin(A - B)$ B. $2 - 2 \cdot \sin(A - B)$ C. $2 + 2\cos(A - B)$
D. $2 - 2 \cdot \cos(A - B)$ E. $2 - 2 \cdot \cos(A + B)$

18. $\sin 165^\circ \cdot \cos 15^\circ + \cos 165^\circ \cdot \sin 15^\circ = \dots$

- A. $-\frac{1}{2}\sqrt{3}$ B. $-\frac{1}{2}$ C. 0
D. $\frac{1}{2}$ E. $\frac{1}{2}\sqrt{3}$

19. $4 \cdot \cos 200^\circ \cdot \cos 10^\circ - 4 \cdot \sin 200^\circ \cdot \sin 10^\circ = \dots$

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

20. $\cos 80^\circ \cdot \sin 20^\circ - \sin 80^\circ \cdot \cos 20^\circ = \dots$

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

21. $\frac{\sin(A+B)}{\tan A + \tan B} = \dots$

- A. $\sin A \cdot \sin B$ B. $-\sin A \cdot \sin B$ C. $\cos A \cdot \sin B$
D. $\sin A \cdot \cos B$ E. $\cos A \cdot \cos B$

22. $\frac{3 \tan 240^\circ - 3 \tan 15^\circ}{2 + 2 \tan 240^\circ \tan 15^\circ} = \dots$

- A. $2/3$ B. $3/2$ C. $-1/2$
D. $2\sqrt{3}$ E. $-2\sqrt{3}$

23. Nilai $\sin(A + B) \cdot \sin(A - B) = \dots$
- A. $\cos^2 A + \cos^2 B$ B. $\cos^2 A - \cos^2 B$ C. $\sin^2 A - \sin^2 B$
D. $\sin^2 A + \sin^2 B$ E. $\sin^2 A + \cos^2 B$

24. Jika $\sin(x + \frac{\pi}{3}) = \sin x$, maka nilai $\tan x =$
- A. $\sqrt{2}$ B. $-\sqrt{2}$ C. $2\sqrt{2}$
D. $-2\sqrt{2}$ E. $\sqrt{3}$

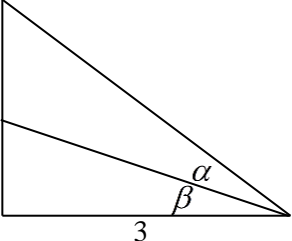
25. Jika $A + B = \frac{3\pi}{4}$, maka $\tan B = \dots$
- A. $\frac{\tan A + 1}{\tan A - 1}$ B. $\frac{\tan A + 2}{\tan A - 2}$ C. $\frac{\tan A - 1}{\tan A + 1}$
D. $\frac{\tan A - 2}{\tan A + 2}$ E. $\frac{\tan A + 1}{\tan A + 2}$

26. Jika $(1 + \tan A) \cdot (1 + \tan B) = 2$ maka nilai $\tan(A + B) = \dots$
- A. 1 B. 1/2 C. -1/2
D. -1 E. $-\frac{1}{2}\sqrt{3}$

27. Jika $\tan(A + B) = 33$ dan $\tan A = 3$ maka nilai $\tan B = \dots$
- A. 0,2 B. 0,4 C. 0,3
D. 0,5 E. 0,8

28. Diketahui $\tan \alpha = -\frac{1}{2}\sqrt{2}$ dan α adalah sudut tumpul, maka $\cos(90 + \alpha) = \dots$
- A. $\frac{1}{2}\sqrt{5}$ B. $-\frac{1}{2}\sqrt{5}$ C. $\frac{1}{3}\sqrt{3}$
D. $-\frac{1}{3}\sqrt{3}$ E. $\sqrt{3}$

29. Pada segitiga ABC diketahui $\tan A = 1$ dan $\tan B = 3$, maka $\tan C = \dots$
- A. 2 B. 4 C. -2
D. -4 E. 5

30.  dari gambar disamping, nilai $\tan \alpha = \dots$
- A. 3/16 B. 6/17
C. 3/17 D. 5/16
E. 1/4

31. Nilai dari $\frac{\sin(A - B)}{\tan A - \tan B}$
- A. $\cos A \cdot \cos B$ B. $\sin A \cdot \sin B$ C. $-\cos A \cdot \cos B$
D. $-\sin A \cdot \sin B$ E. $\cos(A - B)$
32. Pada segitiga ABC diketahui $\sin A = 3/5$ dan $\sin B = 5/13$ serta A dan B lancip. Maka nilai dari $\cos C = \dots$
- A. $63/65$ B. $56/65$ C. $33/65$
D. $-63/65$ E. $-33/65$
33. Bentuk $\sin(\alpha + \beta) \cdot \sin(\alpha - \beta) = \sin^2 \alpha - \sin^2 \beta$ sama nilainya dengan ...
- A. $\sin^2 \alpha - \sin^2 \beta$ B. $\sin \alpha - \sin \beta$ C. $\sin \alpha + \sin \beta$
D. $2 \cdot \sin \alpha \sin \beta$ E. $\sin \alpha - \cos \beta$
34. Jika berlaku $5 \cdot \cos(x + 45^\circ) + p \cdot \sin(x + 45^\circ) = q \cdot \cos x$, maka nilai $p \times q = \dots$
- A. $30\sqrt{3}$ B. 30 C. $30\sqrt{2}$
D. 25 E. $25\sqrt{2}$
35. Buktikanlah bahwa $\frac{\sin(A - B)}{\sin A \cdot \sin B} + \frac{\sin(B - C)}{\sin B \cdot \sin C} + \frac{\sin(C - A)}{\sin C \cdot \sin A} = 0$
36. Buktikanlah bahwa $\tan 3\alpha - \tan 2\alpha - \tan \alpha = \tan 3\alpha \cdot \tan 2\alpha \cdot \tan \alpha$
37. Jika dalam segitiga ABC berlaku $\sin^2 A + \sin^2 B = \sin^2 C$, maka tunjukkanlah bahwa sudut C siku-siku.
38. Jika pada segitiga ABC berlaku $a \cdot \cos B = b \cdot \cos A$, buktikanlah bahwa segitiga ABC sama kaki