Phương trình lượng giác luyện thi Đại Học [2012]

Giải các phương trình sau:

1. $\sin 2x + 2\tan x = 3$ ĐS: $x = \dfrac{\pi}{4} + k\pi$

2. $\cot x = \tan x + \dfrac{2\cos 4x}{\sin 2x}$ ĐS: $x = \pm\dfrac{\pi}{3} + k\pi$

3. $\sqrt{3}\cos 5x - 2\sin 3x\cos 2x - \sin x = 0$ ĐS: $\left[\begin{array}{l} x = \dfrac{\pi}{18} + \dfrac{k\pi}{3} \\ x = -\dfrac{\pi}{6} + \dfrac{k\pi}{2} \end{array}\right.$

4. $8\sin\left(x + \dfrac{\pi}{6}\right) + \tan x + \cot x = 4\cot 2x$ ĐS: $\left[\begin{array}{l} x = \dfrac{\pi}{18} + \dfrac{k2\pi}{3} \\ x = -\dfrac{\pi}{6} + k\pi \end{array}\right.$

5. $\sqrt{3}\sin x + \cos x = \dfrac{1}{\cos x}$ ĐS: $\left[\begin{array}{l} x = \dfrac{\pi}{3} + k\pi \\ x = k\pi \end{array}\right.$

6. $\left(\sin\dfrac{x}{2} + \cos\dfrac{x}{2}\right)^2 + \sqrt{3}\cos x = 2$ ĐS: $\left[\begin{array}{l} x = \dfrac{\pi}{3} + k2\pi \\ x = -\dfrac{\pi}{6} + k2\pi \end{array}\right.$

7. $\sin^2 x(\tan x + 1) = 3\sin x(\cos x - \sin x) + 3$ ĐS: $\left[\begin{array}{l} x = \pm\dfrac{\pi}{3} + k\pi \\ x = -\dfrac{\pi}{4} + k\pi \end{array}\right.$

8. $5\left(\sin x + \dfrac{\cos 3x + \sin 3x}{1 + 2\sin 2x}\right) = \cos 2x + 3$ ĐS: $x = \pm\dfrac{\pi}{3} + k2\pi$

9. $\sin 3x + \cos 3x + 2\cos x = 0$ ĐS: $\left[\begin{array}{l} x = \pm\dfrac{\pi}{3} + k\pi \\ x = -\dfrac{\pi}{4} + k\pi \end{array}\right.$

10. $2(\cos x - 1)\cot x = \dfrac{3}{\sin x} + \dfrac{2\sin x}{\cos x - 1}$ ĐS: $x = \pm\dfrac{\pi}{3} + k2\pi$

11. $\sin^2 3x - \cos^3 4x = \sin^2 5x - \cos^2 6x$ ĐS: $x = \dfrac{k\pi}{9} \vee x = \dfrac{k\pi}{2}$

12. $\dfrac{\sin 2x + \cos x - \sqrt{3}(\cos 2x + \sin x)}{2\sin 2x - \sqrt{3}} = 0$ ĐS: $x = \dfrac{5\pi}{6} + k2\pi$

13. $\cot x - \tan x + 4\sin 2x = \dfrac{2}{\sin 2x}$ ĐS: $x = \pm\dfrac{\pi}{3} + k\pi$

14. $(\sin 2x - \cos 2x)\tan x + \dfrac{\sin 3x}{\cos x} = \sin x + \cos x$ ĐS: $\left[\begin{array}{l} x = \dfrac{\pi}{6} + k2\pi \\ x = \dfrac{5\pi}{6} + k2\pi \\ x = -\dfrac{\pi}{4} + k\pi \end{array}\right.$

15. $\sin^2\left(\dfrac{x}{2} - \dfrac{\pi}{4}\right) \cdot \tan^2 x - \cos^2\dfrac{x}{2} = 0$ ĐS: $\left[\begin{array}{l} x = \pi + k2\pi \\ x = -\dfrac{\pi}{4} + k\pi \end{array}\right.$

16. $(2\cos x - 1)(2\sin x + \cos x) = \sin 2x - \sin x$ ĐS: $\left[\begin{array}{l} x = \pm\dfrac{\pi}{3} + k2\pi \\ x = -\dfrac{\pi}{4} + k\pi \end{array}\right.$

17. $2\cos 3x\cos x + \sqrt{3}(1 + \sin 2x) = 2\sqrt{3}\cos^2\left(2x + \dfrac{\pi}{4}\right)$ ĐS: $\left[\begin{array}{l} x = \dfrac{\pi}{2} + k\pi \\ x = -\dfrac{\pi}{18} + \dfrac{k\pi}{3} \end{array}\right.$