

## Questionnaire 1112-trigo2-A

### QUESTION 1

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

$$\sin 2x = \sin \frac{\pi}{6}$$

angles égaux

*ou*

angles supplémentaires

$$2x = \frac{\pi}{6} + k2\pi$$

$$2x = \pi - \frac{\pi}{6} + k2\pi$$

$$x = \frac{\pi}{12} + k\pi$$

$$x = \frac{5\pi}{12} + k\pi$$

$$k = 0 \rightarrow x = \frac{\pi}{12}$$

$$k = 0 \rightarrow x = \frac{5\pi}{12}$$

$$k = 1 \rightarrow x = \frac{13\pi}{12}$$

$$k = 1 \rightarrow x = \frac{17\pi}{12}$$

$$Sol = \left\{ \frac{\pi}{12}, \frac{5\pi}{12}, \frac{13\pi}{12}, \frac{17\pi}{12} \right\}$$

### QUESTION 2

$$\sin 2x - \cos 3x = 0$$

$$\sin 2x = \cos 3x$$

$$\sin 2x = \sin\left(\frac{\pi}{2} - 3x\right)$$

angles égaux

*ou*

angles supplémentaires

$$2x = \frac{\pi}{2} - 3x + k2\pi$$

$$2x = \pi - \left(\frac{\pi}{2} - 3x\right) + k2\pi$$

$$5x = \frac{\pi}{2} + k2\pi$$

$$2x = \frac{\pi}{2} + 3x + k2\pi$$

$$x = \frac{\pi}{10} + k\frac{2\pi}{5}$$

$$x = -\frac{\pi}{2} + k2\pi$$

$$k = 0 \rightarrow x = \frac{\pi}{10}$$

$$k = 1 \rightarrow x = \frac{3\pi}{2}$$

$$k = 1 \rightarrow x = \frac{\pi}{10} + \frac{2\pi}{5} = \frac{\pi}{2}$$

$$k = 2 \rightarrow x = \frac{\pi}{10} + \frac{4\pi}{5} = \frac{9\pi}{10}$$

$$k = 3 \rightarrow x = \frac{\pi}{10} + \frac{6\pi}{5} = \frac{13\pi}{10}$$

$$k = 4 \rightarrow x = \frac{\pi}{10} + \frac{8\pi}{5} = \frac{17\pi}{10}$$

$$Sol = \left\{ \frac{\pi}{10}, \frac{\pi}{2}, \frac{9\pi}{10}, \frac{13\pi}{10}, \frac{3\pi}{2}, \frac{17\pi}{10} \right\}$$

QUESTION 3

$$\sin 2x = 2 \sin x$$

$$2 \sin x \cos x = 2 \sin x$$

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

$$\sin x = 0$$

$$x = 0$$

$$x = \pi$$

*ou*

$$\cos x = 1$$

$$x = 0$$

$$Sol = \{0, \pi\}$$

QUESTION 4

$$\cos \frac{x}{2} \cos \frac{3x}{2} - \sin \frac{3x}{2} \sin \frac{x}{2} = \frac{\sqrt{2}}{2}$$

$$\cos\left(\frac{x}{2} + \frac{3x}{2}\right) = \frac{\sqrt{2}}{2}$$

$$\cos 2x = \cos \frac{\pi}{4}$$

angles égaux

*ou*

angles opposés

$$2x = \frac{\pi}{4} + k2\pi$$

$$2x = -\frac{\pi}{4} + k2\pi$$

$$x = \frac{\pi}{8} + k\pi$$

$$x = -\frac{\pi}{8} + k\pi$$

$$k = 0 \rightarrow x = \frac{\pi}{8}$$

$$k = 1 \rightarrow x = \frac{7\pi}{8}$$

$$k = 1 \rightarrow x = \frac{9\pi}{8}$$

$$k = 2 \rightarrow x = \frac{15\pi}{8}$$

$$Sol = \left\{ \frac{\pi}{8}, \frac{7\pi}{8}, \frac{9\pi}{8}, \frac{15\pi}{8} \right\}$$

## Questionnaire 1112-trigo2-B

### QUESTION 1

$$\cos 2x = \frac{\sqrt{2}}{2}$$

$$\cos 2x = \cos \frac{\pi}{4}$$

angles égaux

*ou*

angles opposés

$$2x = \frac{\pi}{4} + k2\pi$$

$$2x = -\frac{\pi}{4} + k2\pi$$

$$x = \frac{\pi}{8} + k\pi$$

$$x = -\frac{\pi}{8} + k\pi$$

$$k = 0 \rightarrow x = \frac{\pi}{8}$$

$$k = 1 \rightarrow x = \frac{7\pi}{8}$$

$$k = 1 \rightarrow x = \frac{9\pi}{8}$$

$$k = 2 \rightarrow x = \frac{15\pi}{8}$$

$$Sol = \left\{ \frac{\pi}{8}, \frac{7\pi}{8}, \frac{9\pi}{8}, \frac{15\pi}{8} \right\}$$

### QUESTION 2

$$\sin 4x + \sin x = 0$$

$$\sin 4x = \sin(-x)$$

angles égaux

*ou*

angles supplémentaires

$$4x = -x + k2\pi$$

$$4x = \pi - (-x) + k2\pi$$

$$5x = k2\pi$$

$$4x = \pi + x + k2\pi$$

$$x = k\frac{2\pi}{5}$$

$$3x = \pi + k2\pi$$

$$k = 0 \rightarrow x = 0$$

$$x = \frac{\pi}{3} + k\frac{2\pi}{3}$$

$$k = 1 \rightarrow x = \frac{2\pi}{5}$$

$$k = 0 \rightarrow x = \frac{\pi}{3}$$

$$k = 2 \rightarrow x = \frac{4\pi}{5}$$

$$k = 1 \rightarrow x = \pi$$

$$k = 3 \rightarrow x = \frac{6\pi}{5}$$

$$k = 2 \rightarrow x = \frac{5\pi}{3}$$

$$k = 4 \rightarrow x = \frac{8\pi}{5}$$

$$Sol = \left\{ 0, \frac{2\pi}{5}, \frac{\pi}{3}, \frac{4\pi}{5}, \pi, \frac{6\pi}{5}, \frac{5\pi}{3}, \frac{8\pi}{5} \right\}$$

QUESTION 3

$$\sin 2x = 2 \cos x$$

$$2 \sin x \cos x = 2 \cos x$$

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

$$\cos x = 0$$

$$x = \frac{\pi}{2}$$

$$x = \frac{3\pi}{2}$$

*ou*

$$\sin x = 1$$

$$x = \frac{\pi}{2}$$

$$Sol = \left\{ \frac{\pi}{2}, \frac{3\pi}{2} \right\}$$

QUESTION 4

$$\sin \frac{3x}{2} \cos \frac{x}{2} - \sin \frac{x}{2} \cos \frac{3x}{2} = \frac{\sqrt{3}}{2}$$

$$\sin\left(\frac{3x}{2} - \frac{x}{2}\right) = \frac{\sqrt{3}}{2}$$

$$\sin x = \sin \frac{\pi}{3}$$

angles égaux

$$x = \frac{\pi}{3} + k2\pi$$

$$k = 0 \rightarrow x = \frac{\pi}{3}$$

*ou*

angles supplémentaires

$$x = \pi - \frac{\pi}{3} + k2\pi$$

$$x = \frac{2\pi}{3} + k2\pi$$

$$k = 0 \rightarrow x = \frac{2\pi}{3}$$

$$Sol = \left\{ \frac{\pi}{3}, \frac{2\pi}{3} \right\}$$