

## Mesures principales d'angles en radians

**MODELES : Mesures principales des angles suivants :**

$$\frac{33\pi}{13} ? \text{ On utilise le fait que } 2\pi = \frac{26\pi}{13} : \text{ Ainsi : } \frac{33\pi}{13} = \frac{26\pi}{13} + \frac{7\pi}{13} = \frac{7\pi}{13} + 2\pi \text{ avec } \frac{7\pi}{13} \in ]-\pi; \pi]$$

$$-\frac{19\pi}{4} ? \text{ On a : } 2\pi = \frac{8\pi}{4} : \text{ Ainsi : } -\frac{19\pi}{4} = -\frac{8\pi}{4} - \frac{8\pi}{4} - \frac{3\pi}{4} = -\frac{3\pi}{4} - 2\pi - 2\pi \text{ avec } -\frac{3\pi}{4} \in ]-\pi; \pi]$$

$$\frac{31\pi}{6} ? \text{ On a : } 2\pi = \frac{12\pi}{6} : \text{ Ainsi : } \frac{31\pi}{6} = \frac{12\pi}{6} + \frac{12\pi}{6} + \frac{7\pi}{6} = \frac{7\pi}{6} + 2 \times 2\pi \quad \textbf{MAIS} \quad \frac{7\pi}{6} \notin ]-\pi; \pi]$$

$$\frac{31\pi}{6} = \frac{12\pi}{6} + \frac{12\pi}{6} + \frac{12\pi}{6} - \frac{5\pi}{6} = -\frac{5\pi}{6} + 3 \times 2\pi \text{ avec } -\frac{5\pi}{6} \in ]-\pi; \pi]$$

$$-\frac{29\pi}{5} ? \text{ On a : } 2\pi = \frac{10\pi}{5} : \text{ Ainsi } -\frac{29\pi}{5} = -\frac{10\pi}{5} - \frac{10\pi}{5} - \frac{9\pi}{5} = -\frac{9\pi}{5} - 2 \times 2\pi \quad \textbf{MAIS} \quad -\frac{9\pi}{5} \notin ]-\pi; \pi]$$

$$-\frac{29\pi}{5} = -\frac{10\pi}{5} - \frac{10\pi}{5} - \frac{10\pi}{5} + \frac{1\pi}{5} = \frac{\pi}{5} - 3 \times 2\pi \text{ avec } \frac{\pi}{5} \in ]-\pi; \pi]$$

**Exercice 1 :** Quelles sont les mesures principales des angles suivants :

$$\frac{19\pi}{3} ? \text{ On a } 2\pi = \frac{\dots\pi}{3} : \text{ Ainsi : } \frac{19\pi}{3} = \frac{\dots\pi}{3} + \frac{\dots\pi}{3} + \frac{\dots\pi}{3} + \frac{\dots\pi}{3} = \frac{\dots\pi}{3} + 3 \times 2\pi, \quad \frac{\dots\pi}{3} \in ]-\pi; \pi]$$

$$\frac{33\pi}{6} ? \text{ On a } 2\pi = \frac{\dots\pi}{6} : \text{ Ainsi : } \frac{33\pi}{6} = \frac{\dots\pi}{6} + \frac{\dots\pi}{6} + \frac{\dots\pi}{6} = \frac{\dots\pi}{6} + 2 \times 2\pi \quad \textbf{MAIS} \quad \frac{\dots\pi}{6} \notin ]-\pi; \pi]$$

$$\frac{33\pi}{6} = \frac{\dots\pi}{6} + \frac{\dots\pi}{6} + \frac{\dots\pi}{6} - \frac{\dots\pi}{6} = -\frac{\dots\pi}{6} + 3 \times 2\pi, \quad \dots \frac{\dots\pi}{2} \in ]-\pi; \pi]$$

$$\frac{-23\pi}{9} ?$$

$$\frac{-25\pi}{7} ?$$

**Exercice 2 :**

Pour chaque mesure d'angle, en radians, donner la mesure principale  $\theta_i$  ( $i$  variant de 1 à 8), puis placer le point  $M_i$  correspondant sur un cercle trigonométrique :

$$\frac{7\pi}{4}, \frac{5\pi}{4}, \frac{75\pi}{4}, \frac{13\pi}{3}, \frac{-13\pi}{3}, \frac{19\pi}{5}, -124\pi, 125\pi$$

**Pour mémoire :**

$x$ (en radians)	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\pi$	$\frac{3\pi}{2}$	$2\pi$
$\cos x$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	-1	0	1
$\sin x$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	0	-1	0

## CORRIGE

### Mesures principales d'angles en radians

$$\frac{33\pi}{13} ? \quad \text{On utilise le fait que } 2\pi = \frac{26\pi}{13} : \quad \text{Ainsi : } \frac{33\pi}{13} = \frac{26\pi}{13} + \frac{7\pi}{13} = \frac{7\pi}{13} + 2\pi \quad \text{avec } \frac{7\pi}{13} \in ]-\pi; \pi]$$

$$-\frac{19\pi}{4} ? \quad \text{On a : } 2\pi = \frac{8\pi}{4} : \quad \text{Ainsi : } -\frac{19\pi}{4} = -\frac{8\pi}{4} - \frac{8\pi}{4} - \frac{3\pi}{4} = -\frac{3\pi}{4} - 2\pi - 2\pi \quad \text{avec } -\frac{3\pi}{4} \in ]-\pi; \pi]$$

$$\frac{31\pi}{6} ? \quad \text{On a : } 2\pi = \frac{12\pi}{6} : \quad \text{Ainsi : } \frac{31\pi}{6} = \frac{12\pi}{6} + \frac{12\pi}{6} + \frac{7\pi}{6} = \frac{7\pi}{6} + 2 \times 2\pi \quad \text{MAIS } \frac{7\pi}{6} \notin ]-\pi; \pi]$$

$$\frac{31\pi}{6} = \frac{12\pi}{6} + \frac{12\pi}{6} + \frac{12\pi}{6} - \frac{5\pi}{6} = -\frac{5\pi}{6} + 3 \times 2\pi \quad \text{avec } -\frac{5\pi}{6} \in ]-\pi; \pi]$$

$$-\frac{29\pi}{5} ? \quad \text{On a : } 2\pi = \frac{10\pi}{5} : \quad \text{Ainsi : } -\frac{29\pi}{5} = -\frac{10\pi}{5} - \frac{10\pi}{5} - \frac{9\pi}{5} = -\frac{9\pi}{5} - 2 \times 2\pi \quad \text{MAIS } -\frac{9\pi}{5} \notin ]-\pi; \pi]$$

$$-\frac{29\pi}{5} = -\frac{10\pi}{5} - \frac{10\pi}{5} - \frac{10\pi}{5} + \frac{1\pi}{5} = \frac{\pi}{5} - 3 \times 2\pi \quad \text{avec } \frac{\pi}{5} \in ]-\pi; \pi]$$

**Exercice 1 :** Quelles sont les mesures principales des angles suivants :

$$\frac{19\pi}{3} ? \quad \text{On a } 2\pi = \frac{6\pi}{3} : \quad \text{Ainsi : } \frac{19\pi}{3} = \frac{6\pi}{3} + \frac{6\pi}{3} + \frac{6\pi}{3} + \frac{1\pi}{3} = \frac{\pi}{3} + 3 \times 2\pi, \quad \frac{\pi}{3} \in ]-\pi; \pi]$$

$$\frac{33\pi}{6} ? \quad \text{On a } 2\pi = \frac{12\pi}{6} : \quad \text{Ainsi : } \frac{33\pi}{6} = \frac{12\pi}{6} + \frac{12\pi}{6} + \frac{9\pi}{6} = \frac{9\pi}{6} + 2 \times 2\pi \quad \text{MAIS } \frac{9\pi}{6} \notin ]-\pi; \pi]$$

$$\frac{33\pi}{6} = \frac{12\pi}{6} + \frac{12\pi}{6} + \frac{12\pi}{6} - \frac{3\pi}{6} = -\frac{\pi}{2} + 3 \times 2\pi, \quad -\frac{\pi}{2} \in ]-\pi; \pi]$$

$$-\frac{23\pi}{9} ? \quad \text{On a } 2\pi = \frac{18\pi}{9} : \quad \text{Ainsi : } -\frac{23\pi}{9} = -\frac{18\pi}{9} - \frac{5\pi}{9} = -\frac{5\pi}{9} - 1 \times 2\pi, \quad -\frac{5\pi}{9} \in ]-\pi; \pi]$$

$$-\frac{25\pi}{7} ? \quad \text{On a } 2\pi = \frac{14\pi}{7} : \quad \text{Ainsi : } -\frac{25\pi}{7} = -\frac{14\pi}{7} - \frac{11\pi}{7} = -\frac{11\pi}{7} - 1 \times 2\pi \quad \text{MAIS } -\frac{11\pi}{7} \notin ]-\pi; \pi]$$

$$-\frac{25\pi}{7} = -\frac{14\pi}{7} - \frac{14\pi}{7} + \frac{3\pi}{7} = \frac{3\pi}{7} - 2 \times 2\pi, \quad \frac{3\pi}{7} \in ]-\pi; \pi]$$

**Exercice 2 :**

$$\frac{7\pi}{4} = \frac{8\pi}{4} - \frac{\pi}{4} = 2\pi - \frac{\pi}{4}$$

$$\text{donc } \theta_1 = -\frac{\pi}{4}$$

$$\frac{5\pi}{4} = \frac{8\pi}{4} - \frac{3\pi}{4} = 2\pi - \frac{3\pi}{4}$$

$$\text{donc } \theta_2 = -\frac{3\pi}{4}$$

$$\frac{75\pi}{4} = \frac{72\pi}{4} + \frac{3\pi}{4} = 9 \times 2\pi + \frac{3\pi}{4}$$

$$\text{donc } \theta_3 = \frac{3\pi}{4}$$

$$\frac{13\pi}{3} = \frac{12\pi}{3} + \frac{\pi}{3} = 2 \times 2\pi + \frac{\pi}{3}$$

$$\text{donc } \theta_4 = \frac{\pi}{3}$$

$$-\frac{13\pi}{3} = -\frac{12\pi}{3} - \frac{\pi}{3} = -2 \times 2\pi - \frac{\pi}{3}$$

$$\text{donc } \theta_5 = -\frac{\pi}{3}$$

$$\frac{19\pi}{5} = \frac{20\pi}{5} - \frac{\pi}{5} = 2 \times 2\pi - \frac{\pi}{5}$$

$$\text{donc } \theta_6 = -\frac{\pi}{5}$$

$$-124\pi = -62 \times 2\pi$$

$$\text{donc } \theta_7 = 0$$

$$125\pi = 124\pi + \pi = 62 \times 2\pi + \pi$$

$$\text{donc } \theta_8 = \pi$$

