Exercícios: Equações trigonométricas fundamentais

Resolva as seguintes equações, para $x \in \mathbb{R}$:

1. $sen\ x = sen\frac{\pi}{5}$

2. $sen\ x = \frac{-\sqrt{2}}{2}$

3. $sen\ 2x = \frac{1}{2}$

4. $sen\left(x - \frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}$

5. $cos\ x = -1$

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

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

8. $cos\ 2x = \frac{\sqrt{3}}{2}$

9. $cos\left(x - \frac{\pi}{4}\right) = 1$

10. $tg\ x = -\sqrt{3}$

11. $tg\ 2x = \sqrt{3}$

12. $tg\ 5x = tg\ 3x$

Gabarito:

1. $S = \{x \in \mathbb{R} / x = \frac{\pi}{5} + 2k\pi \ \ ou \ \ x = \frac{4\pi}{5} + 2k\pi\}$
2. $S = \{x \in \mathbb{R} / x = \frac{5\pi}{4} + 2k\pi \ \ ou \ \ x = -\frac{\pi}{4} + 2k\pi\}$
3. $S = \{x \in \mathbb{R} / x = \frac{\pi}{12} + k\pi \ \ ou \ \ x = \frac{5\pi}{12} + k\pi\}$
4. $S = \{x \in \mathbb{R} / x = \frac{2\pi}{3} + 2k\pi \ \ ou \ \ x = \pi + 2k\pi\}$
5. $S = \{x \in \mathbb{R} / x = \pi + 2k\pi\}$
6. $S = \{x \in \mathbb{R} / x = \pm\frac{\pi}{4} + 2k\pi\}$
7. $S = \left\{x \in \mathbb{R} / x = \pm\frac{5\pi}{6} + 2k\pi\right\}$
8. $S = \left\{x \in \mathbb{R} / x = \pm\frac{\pi}{12} + k\pi\right\}$
9. $S = \left\{x \in \mathbb{R} / x = \frac{\pi}{4} + 2k\pi\right\}$
10. $S = \left\{x \in \mathbb{R} / x = \frac{2\pi}{3} + k\pi\right\}$
11. $S = \left\{x \in \mathbb{R} / x = \frac{\pi}{6} + \frac{k\pi}{2}\right\}$
12. $S = \left\{x \in \mathbb{R} / x = \frac{k\pi}{2}, +k \text{ par}\right\}$