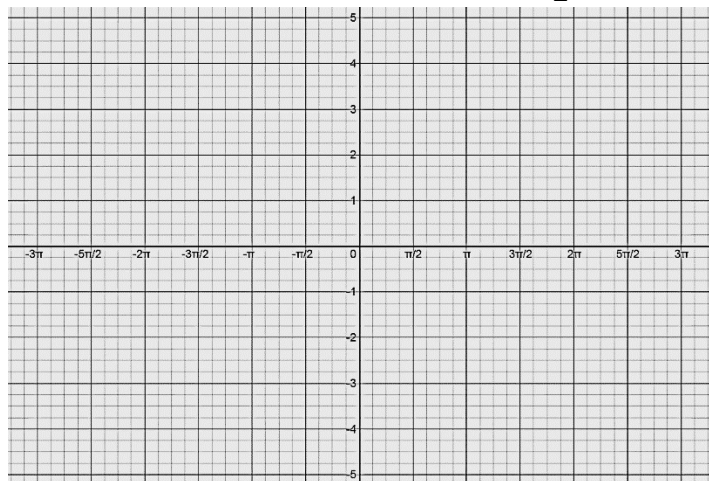# Horizontal and Vertical Translations
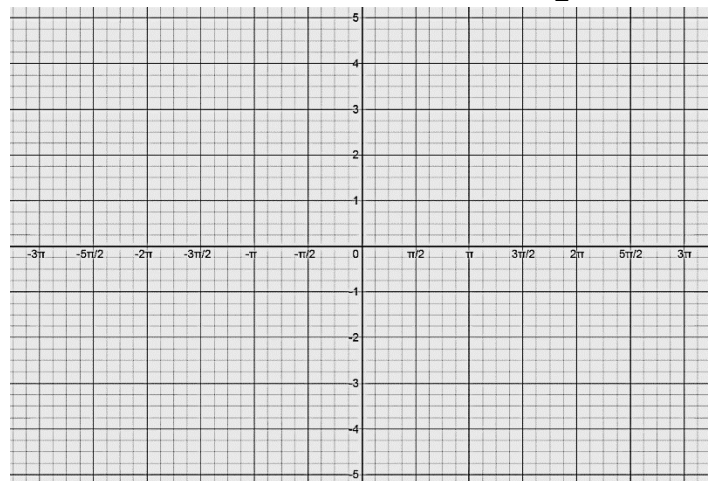
Name_____

Graph each of the following:
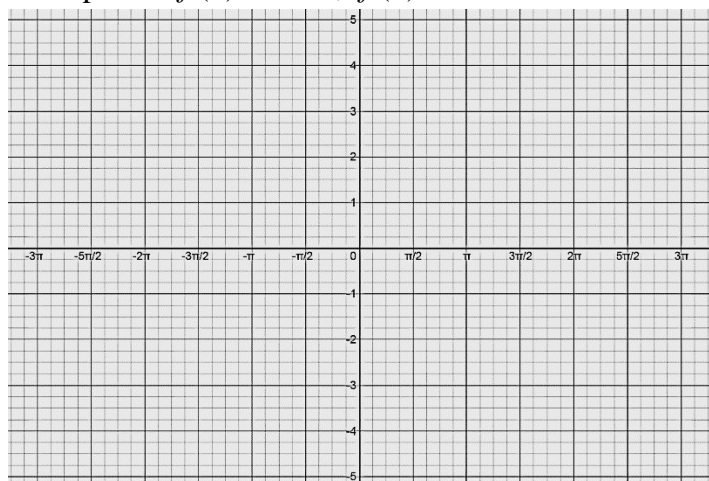
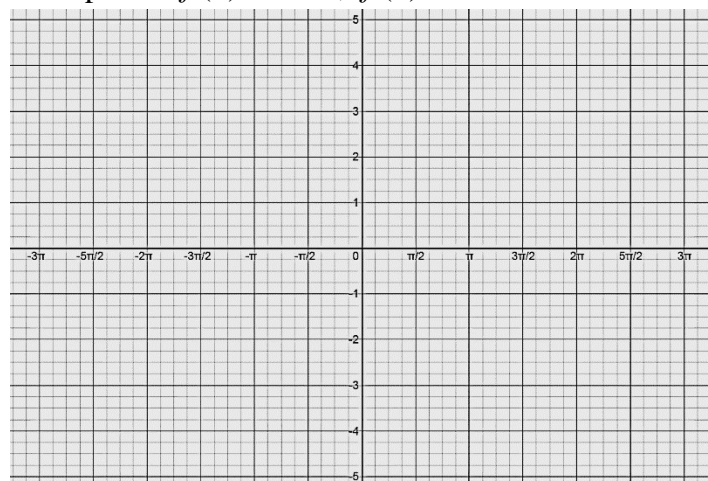Example 1: $f(x) = \cos x$, $f(x) = \cos(x + \dfrac{\pi}{2})$

Example 2: $f(x) = \cos x$, $f(x) = \cos(x - \dfrac{\pi}{2})$

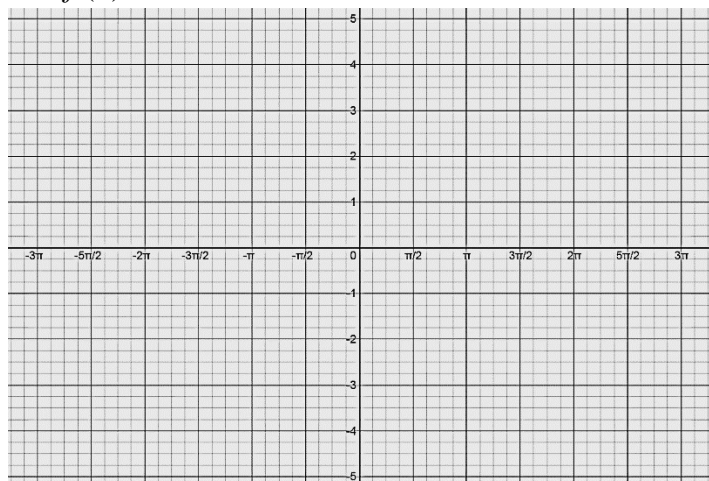Example 3: $f(x) = \cos x$, $f(x) = \cos x + 2$

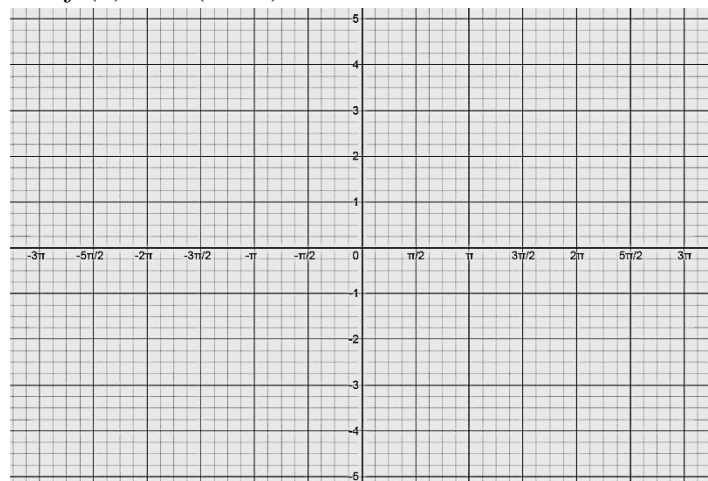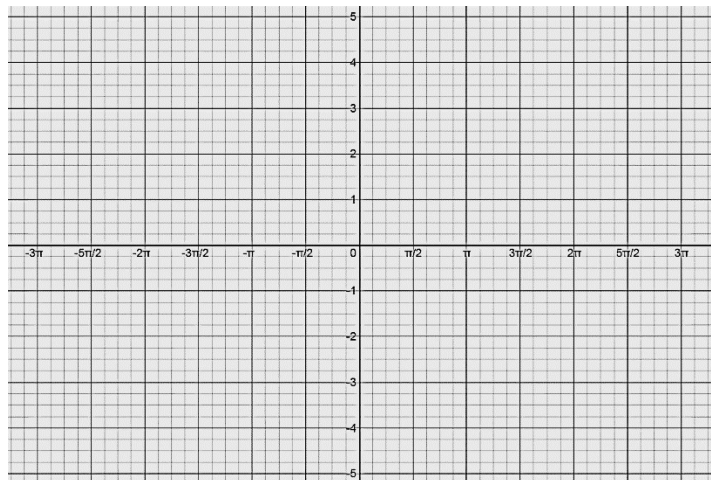Example 4: $f(x) = \cos x$, $f(x) = \cos x - 3$
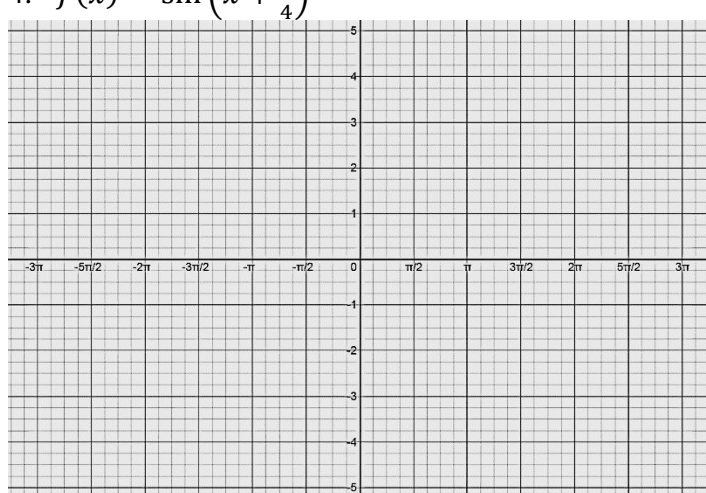
Graph the following.

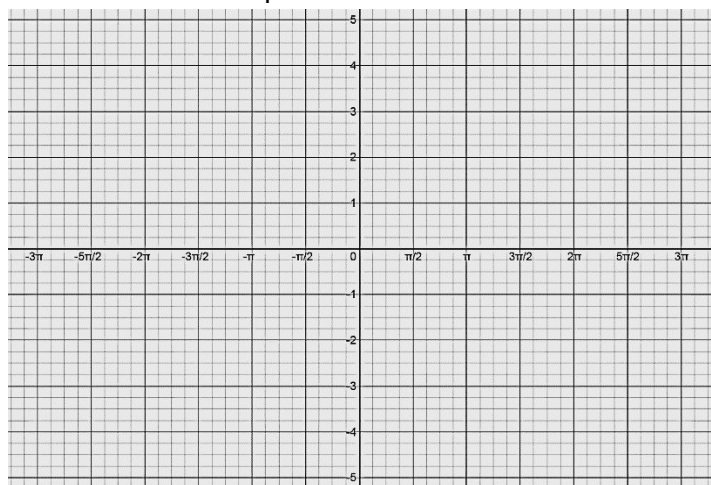1. $f(x) = \sin x$

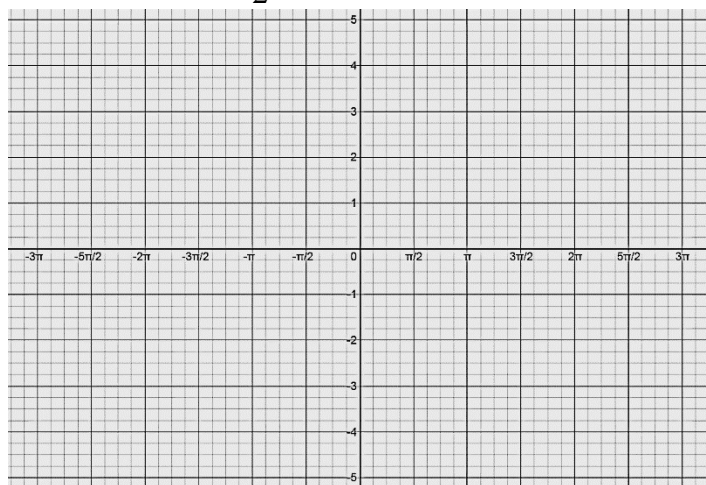2. $f(x) = \sin(x + \pi)$

3. $f(x) = \sin x - 2$

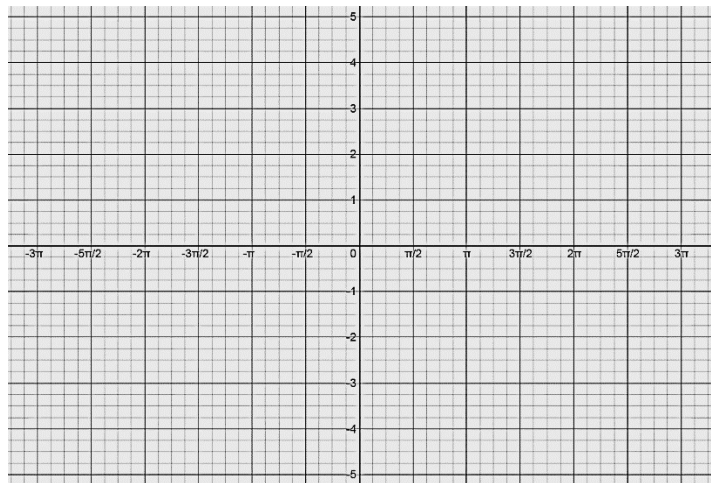4. $f(x) = \sin\left(x + \dfrac{\pi}{4}\right)$

5. $f(x) = \cos\left(x - \dfrac{\pi}{4}\right)$

6. $f(x) = \sin\left(x - \dfrac{\pi}{2}\right)$

7. $f(x) = \cos x + 1$

8. $f(x) = \sin x + 3$