Equations of the form $\cos(x) = b$

№1. Solve the following equations:

1. $\cos 3x = -\frac{1}{2}$;
2. $\cos 6x = 1$;
3. $\cos \frac{2\pi x}{3} = 0$;
4. $\cos 9x = -\frac{1}{5}$;
5. $\cos \frac{5}{6}x = \sqrt{3}$;
6. $\cos\left(-\frac{x}{3}\right) = \frac{\sqrt{3}}{3}$.

№2. Solve the following equations:

1. $\cos\left(x + \frac{\pi}{6}\right) = \frac{\sqrt{2}}{2}$;
2. $\cos\left(\frac{\pi}{4} - x\right) = -\frac{\sqrt{3}}{2}$;
3. $\cos\left(\frac{x}{6} - 2\right) = -1$;
4. $2\cos\left(\frac{\pi}{8} - 3x\right) + 1 = 0$.

№3. Find the greatest negative root of the equation $\cos\left(x - \frac{\pi}{6}\right) = \frac{1}{2}$.

№4. How many roots of the equation $\cos 3x = \frac{\sqrt{3}}{2}$ belong to an interval $\left[-\frac{\pi}{2}; \pi\right]$?

№5. Solve the following equations:

1. $\cos \frac{2\pi}{x} = 1$;
2. $\cos \pi\sqrt{x} = -\frac{\sqrt{3}}{2}$;
3. $\cos(\cos x) = \frac{1}{2}$.