

## GONIOMETRIE

### Grafy goniometrických funkcí

Načrtněte pěkně grafy následujících goniometrických funkcí:

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

2.  $y = \sin \frac{x}{2} + 1$

3.  $y = 3 \sin \frac{x}{2} + 2$

4.  $y = 3 \sin \left( \frac{x}{2} + \frac{\pi}{4} \right) - 2$

5.  $y = -2 \cos x$

6.  $y = 2 \cos x - 2$

7.  $y = 2 \cos \left( x - \frac{\pi}{3} \right) + 1$

8.  $y = 2 \cos \left( \frac{x}{2} - \frac{\pi}{3} \right) - 3$

9.  $y = \cos 2x + 1$

10.  $y = 3 \cos \left( 2x + \frac{\pi}{6} \right) - 1$

11.  $y = \operatorname{tg}(x + \pi)$

12.  $y = \operatorname{tg}(x + \pi) + 1$

13.  $y = \operatorname{tg} \frac{x}{2}$

14.  $y = \operatorname{tg} 2x$

15.  $y = \operatorname{tg}(x + \pi)$

16.  $y = \operatorname{tg} \left( \frac{x}{2} + \frac{\pi}{3} \right) - 1$

17.  $y = \operatorname{cotg} \frac{x}{2} - 2$

18.  $y = \operatorname{cotg} \left( \frac{x}{2} - \frac{\pi}{4} \right)$

19.  $y = \operatorname{cotg} 2x + 1$

20.  $y = \operatorname{cotg} \left( 2x + \frac{\pi}{4} \right) - 1$

### Goniometrické rovnice

Řešte následující rovnice o neznámé  $x$  v  $R$ :

1.  $4 \sin \left( x - \frac{\pi}{2} \right) = 2$

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

3.  $\sqrt{2} \sin \left( \frac{x}{2} - \frac{\pi}{4} \right) = 1$

4.  $4\sqrt{3} \cos \left( \frac{x}{2} - \frac{\pi}{6} \right) = \sqrt{12}$

5.  $\operatorname{tg} \frac{x}{2} = 1$

6.  $6 \operatorname{cotg} \left( 2x - \frac{\pi}{3} \right) = \sqrt{12}$

7.  $\sqrt{6} \operatorname{cotg} \left( \frac{x}{2} + \pi \right) = \sqrt{18}$

8.  $\operatorname{tg} \left( 2x - \frac{\pi}{2} \right) = \frac{\sqrt{3}}{3}$

9.  $\sin \left( x + \frac{\pi}{3} \right) = \sqrt{3} \cos \left( x + \frac{\pi}{3} \right)$

10.  $\cos^3 x + \frac{1}{2} \cos^2 x - \cos x = \frac{1}{2}$

11.  $\sin x \left( \sin^2 x - \sin x - \frac{1}{4} \right) = -\frac{1}{4}$

12.  $-2 \sin^2 x + \cos x = -1 + 2 \cos x$

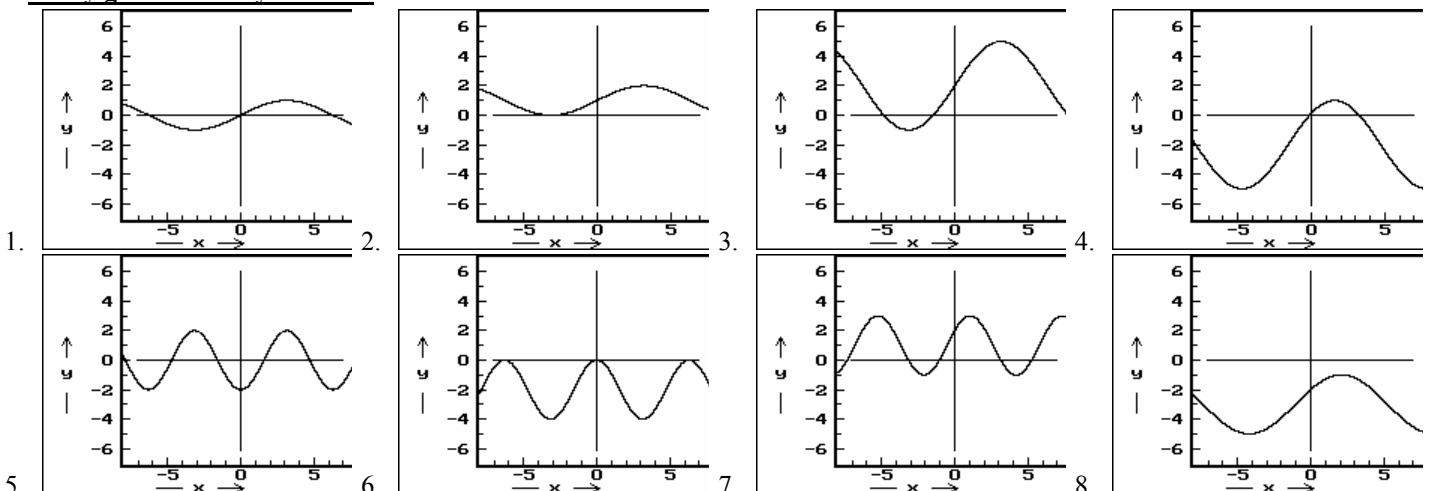
13.  $2(1 - \sin x) - \sin x = \cos^2 x - 1$

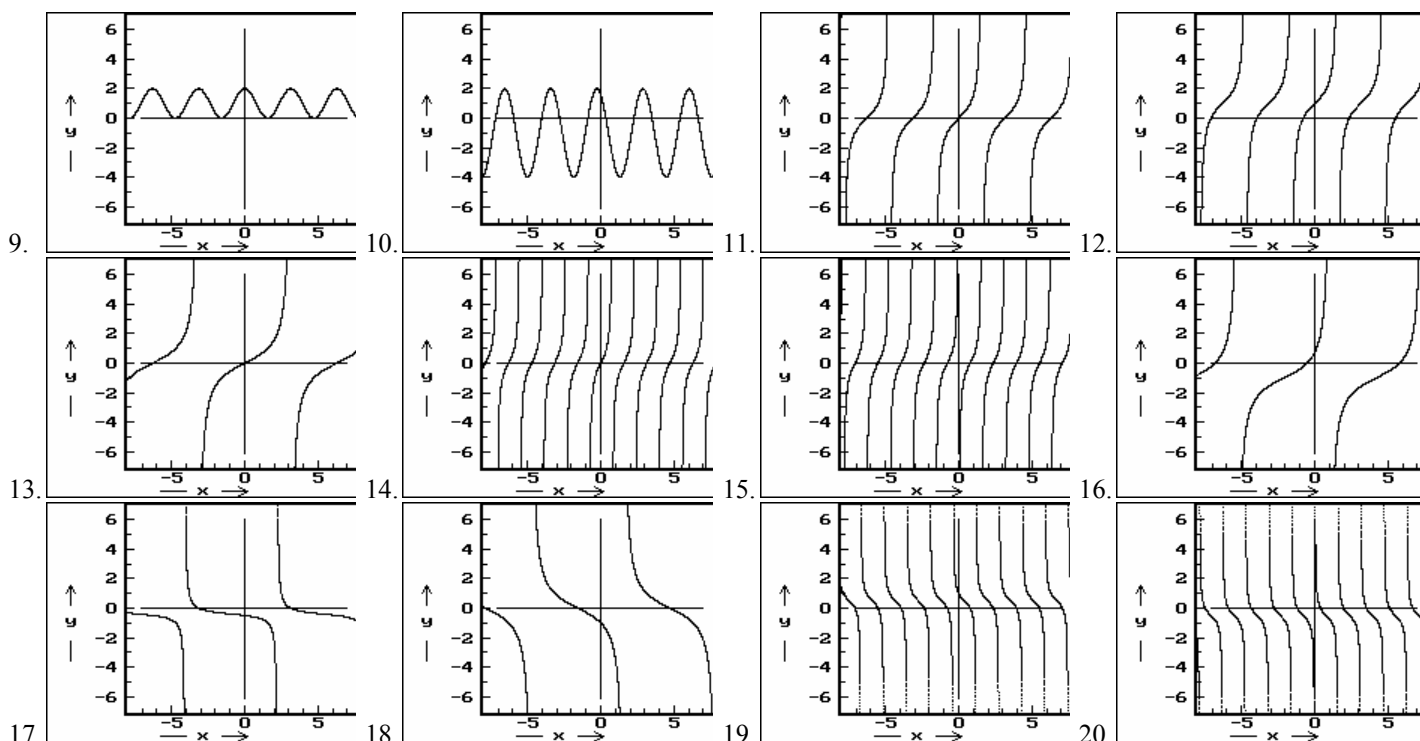
14.  $\operatorname{tg} x (\operatorname{tg}^2 x + \sqrt{3} \operatorname{tg} x - 1) = \sqrt{3}$

15.  $3 \operatorname{cotg}^3 x - 3 \operatorname{cotg} x \left( 1 + \frac{\sqrt{3}}{3} \operatorname{cotg} x \right) = -\sqrt{3}$

## VÝSLEDKY

### Grafy goniometrických funkcí





### Goniometrické rovnice

1.  $O = D = R, P = \left\{ \frac{\pi}{2} + 2k\pi; \frac{7}{6}\pi + 2k\pi; k \in Z \right\}$
2.  $O = D = R, P = \left\{ \frac{7}{48}\pi + k\pi; \frac{7}{24}\pi + k\pi; k \in Z \right\}$
3.  $O = D = R, P = \{ \pi + 4k\pi; 2\pi + 4k\pi; k \in Z \}$
4.  $O = D = R, P = \left\{ \pi + 4k\pi; \frac{11}{3}\pi + 4k\pi; k \in Z \right\}$
5.  $O = R, D = R - \{ \pi + 2k\pi \}, P = \left\{ \frac{\pi}{2} + 2k\pi; k \in Z \right\}$
6.  $O = R, D = R - \left\{ \frac{\pi}{6} + k\frac{\pi}{2}; k \in Z \right\}, P = \left\{ \frac{\pi}{3} + k\frac{\pi}{2}; k \in Z \right\}$
7.  $O = R, D = R - \{ 2\pi(k-1); k \in Z \}, P = \left\{ -\frac{5}{3}\pi + 2k\pi; k \in Z \right\}$
8.  $O = R, D = R - \{ 2k\pi; k \in Z \}, P = \left\{ \frac{\pi}{3} + k\frac{\pi}{2}; k \in Z \right\}$
9.  $O = R, D = R - \left\{ \frac{\pi}{6} + k\pi; k \in Z \right\}, P = \{ k\pi; k \in Z \}$
10.  $O = D = R, P = \left\{ k\pi; \frac{2}{3}\pi + 2k\pi; \frac{4}{3}\pi + 2k\pi; k \in Z \right\}$
11.  $O = D = R, P = \left\{ \frac{\pi}{2} + 2k\pi; \frac{\pi}{6} + 2k\pi; \frac{5}{6}\pi + 2k\pi; \frac{7}{6}\pi + 2k\pi; \frac{11}{6}\pi + 2k\pi; k \in Z \right\}$
12.  $O = D = R, P = \left\{ 2k\pi; \frac{2}{3}\pi + 2k\pi; \frac{4}{3}\pi + 2k\pi; k \in Z \right\}$
13.  $O = D = R, P = \left\{ \frac{\pi}{2} + 2k\pi; \frac{\pi}{6} + 2k\pi; \frac{5}{6}\pi + 2k\pi; \frac{7}{6}\pi + 2k\pi; \frac{11}{6}\pi + 2k\pi; k \in Z \right\}$
14.  $O = R, D = R - \left\{ \frac{\pi}{2} + k\pi; k \in Z \right\}, P = \left\{ \frac{\pi}{4} + k\pi; -\frac{\pi}{4} + k\pi; -\frac{\pi}{3} + k\pi; k \in Z \right\}$
15.  $O = R, D = R - \{ k\pi; k \in Z \}, P = \left\{ \frac{\pi}{4} + k\pi; \frac{3}{4}\pi + k\pi; \frac{\pi}{3} + k\pi; k \in Z \right\}$