

Arbeitsblatt Nr.

Datum:

Name:

Klasse:

Fach:

Aufgabe 3:

a) $\cos(2x) = -\frac{\pi}{6}$

Substitution: $2x = z$ $x = 0,5z$

$z_{\min} = 2 \cdot (-1)$ $z_{\min} = -2$

$z_{\max} = 2 \cdot \pi$ $z_{\max} = 6,28$

$-2 \leq z \leq 2\pi$

$\cos(z) = -\frac{\pi}{6}$

$z_1 = \arccos\left(-\frac{\pi}{6}\right)$ $z_1 = 1,02$ $x_1 = 0,5 \cdot 1,02$ $x_1 = 0,51$

$z_2 = -z_1$ $z_2 = -1,02$ $x_2 = 0,5 \cdot (-1,02)$ $x_2 = -0,51$

$z_3 = z_1 - 2\pi$ $z_3 = -5,26$

$z_4 = z_1 + 2\pi$ $z_4 = 7,30$

$z_5 = z_2 + 2\pi$ $z_5 = 5,26$ $x_3 = 0,5 \cdot 5,26$ $x_3 = 2,63$

b) $3 \sin(2x - 1) = 2$ $\sin(2x - 1) = \frac{2}{3}$

Substitution: $2x - 1 = z$ $2x = z + 1$ $x = 0,5z + 0,5$

$z_{\min} = 2 \cdot (-2) - 1$ $z_{\min} = -5$

$z_{\max} = 2 \cdot 0 - 1$ $z_{\max} = -1$

$-5 \leq z \leq -1$

$\sin(z) = \frac{2}{3}$

$z_1 = \arcsin\left(\frac{2}{3}\right)$ $z_1 = 0,730$

$z_2 = \pi - z_1$ $z_2 = 2,41$

$z_3 = z_1 - 2\pi$ $z_3 = -5,55$

$z_4 = z_2 - 2\pi$ $z_4 = -3,87$ $x_1 = 0,5 \cdot (-3,87) + 0,5$ $x_1 = -1,44$