Øving 2

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1 **a)**

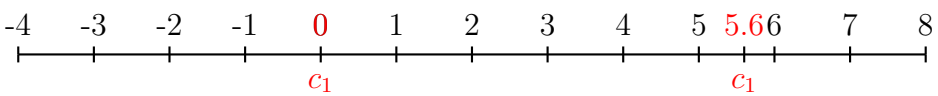
$$\begin{aligned}|5-2x|<3 &\Leftrightarrow -3<5-2x<3\\ &\Leftrightarrow -(-3-5)<2x<-(3-5)\\ &\Leftrightarrow 8>2x>2\\ &\Leftrightarrow 4<x<1\\ &\boxed{x\in[1,4]}\end{aligned}$$

b)

$$\begin{aligned}\left|x^2-3\right|<6 &\Leftrightarrow -6<x^2-3<6\\ &\Leftrightarrow -6+3<x^2<6+3\\ &\Leftrightarrow -3<x<3\\ &\boxed{x\in[-3,3]}\end{aligned}$$

2 **a)**

$$\begin{aligned}|-4.5-1.1| &= |-4.5-c_1|+|c_1-1.1|\\ 5.6-(|-4.5-c_1|) &= |c_1-1.1|\\ &\Updownarrow\\ 5.6+4.5-c_1=c_1-1.1 &\vee 5.6-4.5-c_1=c_1-1.1\\ 2c_1=11.2 &\vee 2c_1=0\\ \boxed{c_1=5.6} &\vee \boxed{c_1=0}\end{aligned}$$



b)

$$\begin{aligned}|-4.5-1.1| &< |-4.5-c_2|+|c_2-1.1|\\ 5.6 &< |-4.5-c_2|+|c_2-1.1|\\ &\Updownarrow\\ -5.6>-4.5-c_2+c_2-1.1 &\vee 5.6<-4.5-c_2+c_2-1.1\end{aligned}$$

3

$$
\begin{aligned}
a, b \in \mathbb{R}, \quad & a \neq b \\
f(x) : \mathbb{R} &\to \mathbb{R} \\
f(a) = b \quad \wedge \quad & f(b) = a \\
f(x) = \frac{1}{a}x + b \quad \wedge \quad & f(x) = \frac{1}{b}x + a \\
f(x) &= \left(\frac{1}{a}x + b\right) + \left(\frac{1}{b}x + a\right) \\
f(x) &= \frac{x}{a} + \frac{x}{b} + b + a \\
f(x) &= \frac{x(a+b) + ab(a+b)}{ab} \\
f(x) &= x(a+b) + (a+b)
\end{aligned}
$$

4 La y_1 og y_2 være to linjer med likningene:

$$
\begin{aligned}
y_1 &= a_1 x + b_1 \\
y_2 &= a_2 x + b_2
\end{aligned}
$$

y_1 og y_2 er parallelle hvis $a_1 \cdot a_2 = -1$

$$
\begin{aligned}
5x + 3y &= -4 \\
&\Downarrow \\
y_1 &= -\frac{5}{3}x - \frac{4}{3} \\
-\frac{5}{3} \cdot a_2 &= -1 \\
a_2 &= \frac{3}{5} \\
b_2 &= 4, \text{ siden } y_2 \text{ skjærer i } (0, 4) \\
y_2 &= \frac{3}{5}x + 4
\end{aligned}
$$