

Block 3: Absolute value, irrational functions

Problem 1: Sketch a graph of a function:

a) $y = |2x - 4|$

b) $y = |x + 1| - |1 - x|$

c) $y = x - |x - 2| - 4$

Problem 2: Solve the equation:

a) $2|x - 1| - 6 = 0$

b) $|2x + 1| - |2x| + 1 = 2x$

Problem 3: Solve in \mathbb{R} :

a) $\sqrt{x - 3} - \sqrt{2x + 5} = 0$

b) $1 + \sqrt{x + 1} = 2x$

c) $\sqrt{x + 2} + \sqrt{x - 1} = \sqrt{3x + 3}$

d) $x - 2 < \sqrt{2x - 4}$

e) $1 - x > \sqrt{5 - 2x}$

Block 4: Exponentials

Problem 1: Solve in \mathbb{R} :

a) $2 \cdot 3^{1-x} = 18$

b) $3^{x+2} + 3^{x+1} + 2 \cdot 3^x = 126$

c) $3^x + 3^{x+1} - 5^{x-1} = 5^x - 3^{x+3} + 5^{x+2}$

d) $\left(\frac{4}{25}\right)^{x+3} \cdot \left(\frac{125}{8}\right)^{4x-1} = \frac{5}{2}$

e) $4^x - 2^{x+1} - 8 = 0$

f) $5^{1-x} = 7^{x-1}$

g) $2^{x+1} + 3 \cdot 2^{2+x} \leq 2^{x+5}$

Problem 2: Sketch a graph of a function:

a) $y = 2^x$

b) $y = 3^{-x}$

c) $y = \left(\frac{1}{3}\right)^x$