Lausn

Haust 2023 Kaflapróf 1 (kaflar 1 – 4) STÆF2TE05

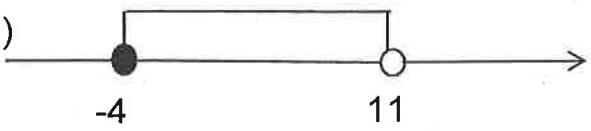
Nafn:_____ Einkunn:_____

1. (8%) Hvert er minnsta mengi (N, Z, Q eða R) sem tölugildin tilheyra til?

a) $\frac{1}{7}$ Q b) -5 Z c) $\sqrt{25}$ N d) 0,217217... Q e) π R

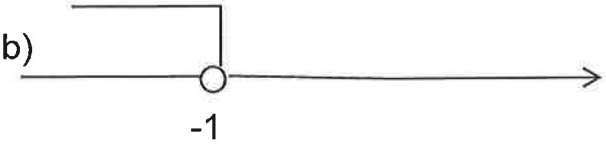
2. (12%) Ritaðu eftirfarandi talnabil með biltáknum:

a)



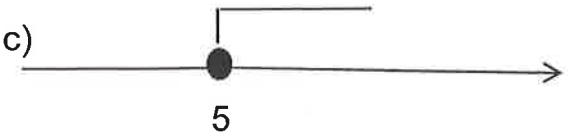
]-4, 11[

b)



]-∞, -1[

c)



[5, ∞[

3. (10%) Leystu eftirfarandi ójöfnu og skilaðu svari með biltáknum:

$\frac{x}{2} \geq x - 1$ ·2

$x \geq 2x - 2$

$x - 2x \geq -2$

$-x \geq -2$

$\frac{-x}{-1} \leq \frac{-2}{-1}$

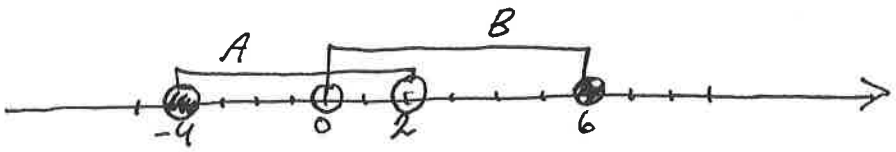
$x \leq 2$

]-∞, 2]

4. (14%) Gefin eru mengin A = [-4 , 2[og B =]0 , 6]. Sýndu á talnalínu eða með biltáknum:

a) $A \cap B$

$]0, 2[$



b) $A \setminus B$

$[-4, 0]$

5. (24%) Þáttaðu eftirtaldar liðastærðir:

a) $x^2 + 17x + 30$

$(x + 2)(x + 15)$

b) $9x^2 - 4y^2$

$(3x + 2y)(3x - 2y)$

c) $x^2 - x - 6$

$(x - 3)(x + 2)$

6. (16%) Reiknaðu og skilaðu sem fullstyttu broti:

a) $\frac{a^5 \cdot b^2}{2x^3 \cdot b} : \frac{b^3}{a^2 \cdot x^5}$

$$\frac{a^5 b^2}{2x^3 b} \cdot \frac{a^2 x^5}{b^3}$$

$$\frac{a \cdot a \cdot a \cdot a \cdot a \cdot \cancel{b} \cdot \cancel{b}}{2 \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{b}} \cdot \frac{a \cdot a \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x}}{\cancel{b} \cdot \cancel{b} \cdot \cancel{b}} = \frac{a^7 \cdot x^2}{2b^2}$$

b) $\frac{x^2-4x-21}{x^2-9}$

$$\frac{(x-7)(x+3)}{(x+3)(x-3)}$$

7. (16%) Einfaldaðu eftirfarandi algebrubrot:

a) $\frac{3x}{4} + \frac{2x}{3} - \frac{5x}{12}$

$$\frac{3x \cdot 3}{4 \cdot 3} + \frac{2x \cdot 4}{3 \cdot 4} - \frac{5x \cdot 1}{12 \cdot 1}$$

$$\frac{9x}{12} + \frac{8x}{12} - \frac{5x}{12} = \frac{9x + 8x - 5x}{12} = \frac{12x}{12} = x$$

b) $\frac{x}{4} - \frac{x+2}{6}$

$$\frac{3x}{3 \cdot 4} - \frac{2(x+2)}{2 \cdot 6}$$

$$\frac{3x}{12} - \frac{2(x+2)}{12}$$

$$\frac{3x - 2x - 4}{12} = \frac{x-4}{12}$$