Laun

Vor 2025 Kaflapróf 1 (kaflar 1 – 4) STÆF2TE05

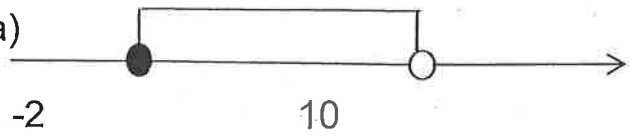
Nafn:_____ Einkunn:_____

1. (10%) Hvert er minnsta mengi (N, Z, Q eða R) sem tölugildin tilheyra til?

a) $\frac{1}{13}$ Q b) -2 Z c) $\sqrt{81}$ N d) 0,217217... Q e) π R

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

a)

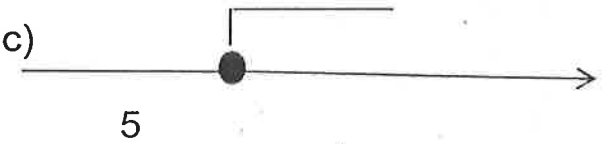



[-2, 10[

b)


]-∞, -1[

c)




[5, ∞[

3. (8%) Leystu eftirfarandi ójöfnu og skilaðu svari með biltáknum:

$2(x-3) \geq x+5$

$2x - 6 \geq x + 5$

$2x - x \geq 5 + 6$

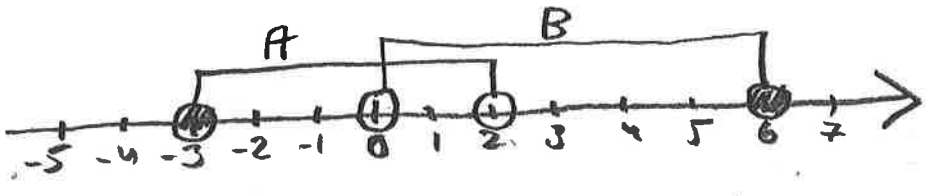
$x \geq 11$

[11, ∞[

4. (14%) Gefin eru mengin A = [-3 , 2[ og B = ]0 , 6]. Sýndu á talnalínu eða með biltáknum:

a) $A \cap B$

$]0,2[$




b) $A \setminus B$ $[-3,0]$

5. (24%) Þáttaðu eftirtaldar liðastærðir:

a) $x^2 + 13x + 30$

$(x+3)(x+10)$

b) $49x^2 - 4y^2$

$(7x)^2 - (2y)^2$

$(7x+2y)(7x-2y)$

c) $x^2 - 4x - 21$

$(x-7)(x+3)$

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

a) $\frac{a^3 \cdot b^2}{2x^3 \cdot b} : \frac{b^3}{4a^2 \cdot x^5}$

$$\frac{a^3b^2}{2x^3 \cdot b} \cdot \frac{4a^2x^5}{b^3} = \frac{a \cdot a \cdot a \cdot b \cdot b}{2 \cdot x \cdot x \cdot x \cdot b} \cdot \frac{2 \cdot 2 \cdot a \cdot a \cdot x \cdot x \cdot x \cdot x \cdot x}{b \cdot b \cdot b}$$

$$= \frac{2a^5x^2}{b^2}$$

b) $\frac{x^2-8x+12}{4x^2-16}$

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

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

7. (16%) Einfaldaðu eftirfarandi algebrubrot:

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

$$\frac{3x \cdot 3}{4 \cdot 3} + \frac{2x \cdot 4}{3 \cdot 4} - \frac{x \cdot 1}{12 \cdot 1} \qquad \frac{9x}{12} + \frac{8x}{12} - \frac{x}{12} = \frac{9x+8x-x}{12} = \frac{16x}{12}$$

$$= \frac{4x}{3}$$

b) $\frac{x}{4} - \frac{(x+2)}{(x-1)}$

$$\frac{x(x-1)}{4(x-1)} - \frac{4(x+2)}{4(x-1)}$$

$$\frac{x(x-1)-4(x+2)}{4(x-1)} = \frac{x^2-x-4x-8}{4(x-1)} \qquad \frac{x^2-5x-8}{4(x-1)}$$