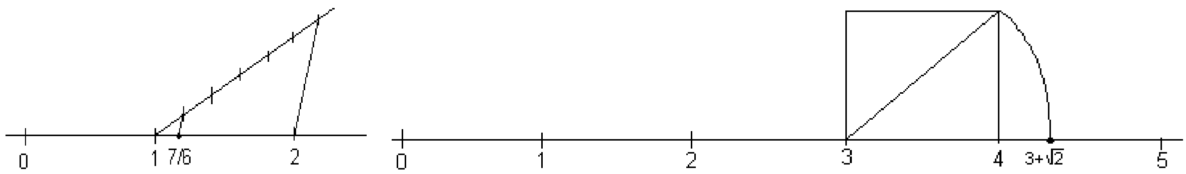
**DEPARTAMENT DE MATEMÀTIQUES**
**IES L'ALZINA**
**Examen Tema 1: Nombres racionals i irracionals.**

RESOLUCIÓ:

1. a) $\frac{7}{6}$ =1,1666666666... $\approx$ 1,167 i $3+\sqrt{2}$ = 2,414213562... $\approx$ 2,414




b)

- reals
  - racionals
    - enters
      - naturals
      - enters negatius i zero
    - fraccions
      - decimals finits o exactes
      - decimals infinits periòdics
        - purs
        - mixtos
  - irracionals → decimals infinits no periòdic

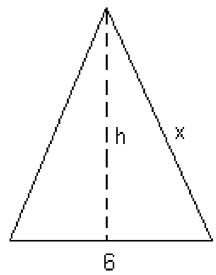
2. a) $$\frac{3}{4}-\frac{5}{3}\cdot\frac{1+\frac{1}{3}\cdot\left(\frac{4}{3}:\frac{8}{5}\right)}{\frac{5}{6}}=\frac{3}{4}-\frac{5}{3}\cdot\frac{1+\frac{1}{3}\cdot\frac{5}{6}}{\frac{5}{6}}=\frac{3}{4}-2\cdot\left(1+\frac{5}{18}\right)=\frac{3}{4}-2\cdot\frac{23}{18}=\frac{3}{4}-\frac{23}{9}=\frac{27-92}{36}=-\frac{65}{36}$$

b) $$\frac{a^{-\frac{3}{2}}\cdot\left(a^{2}\right)^{\frac{4}{3}}}{a^{-2}:a^{\frac{5}{6}}}=\frac{a^{-\frac{3}{2}}\cdot a^{\frac{8}{3}}}{a^{-\frac{17}{6}}}=\frac{a^{\frac{7}{6}}}{a^{-\frac{17}{6}}}=a^{\frac{24}{6}}=a^{4}$$

3. a) $2\cdot\sqrt{45}-3\cdot\sqrt{80}+\sqrt{180}-5\cdot\sqrt{20}=2\cdot3\sqrt{5}-3\cdot4\sqrt{5}+6\cdot\sqrt{5}-5\cdot2\sqrt{5}=-5\cdot\sqrt{5}$

b) $$\frac{2+\sqrt{3}}{2-\sqrt{3}}=\frac{(2+\sqrt{3})\cdot(2+\sqrt{3})}{(2-\sqrt{3})\cdot(2+\sqrt{3})}=\frac{7+4\cdot\sqrt{3}}{2^{2}-(\sqrt{3})^{2}}=7+4\cdot\sqrt{3}$$

4. a) $A=\frac{6\cdot h}{2}=3\cdot h=25$, d'on $h=\frac{25}{3}$ cm.

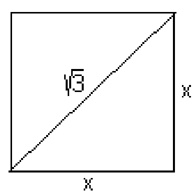



Utilitzant el Teorema de Pitàgores, tenim:

$x^2=3^2+\left(\frac{25}{3}\right)^2=9+\frac{625}{9}=\frac{706}{9}$, d'on $x=\sqrt{\frac{706}{9}}=\frac{\sqrt{706}}{3}$ cm.

El perímetre serà $p=6+2\cdot\frac{\sqrt{706}}{3}$ = 23,71377367... i si l'arrodonim a les centèsimes, tenim que $p\approx 23{,}71$ cm.

b) Aplicant el Teorema de Pitàgores, tenim: $2x^2=3$, d'on $x^2=\frac{3}{2}$




D'aquí que $A=\frac{3}{2}$ cm$^2$.

El perímetre és: $p=4\cdot\sqrt{\frac{3}{2}}=4\cdot\frac{\sqrt{6}}{2}=2\cdot\sqrt{6}$ cm.