

uždavinys 1. Copy this table. not Tick (✓) the correct boxes.

Number	Rational	Irrational
$\sqrt{36}$		
$\sqrt{48}$		
$\sqrt{64}$		
$\sqrt{84}$		
$\sqrt[3]{100}$		

uždavinys 2. Look at these numbers:

12.77, -36 , $\sqrt{27}$, $\sqrt{500}$, $\frac{61}{12}$, $-\sqrt[3]{8}$

(a) Write the **irrational numbers**.

(b) Write the **integers**.

uždavinys 3. Write whether each of these numbers is an integer or a surd.

- (a) $\sqrt{25}$
- (c) $\sqrt{125}$
- (e) $\sqrt{225}$
- (b) $\sqrt[3]{25}$
- (d) $\sqrt[3]{125}$
- (f) $\sqrt[3]{225}$

uždavinys 4. Is each of these numbers rational or irrational? Give a reason for each answer.

- (a) $\sqrt{3} + 6$
- (c) $\sqrt{64} + \sqrt[3]{64}$
- (b) $\sqrt{3} + 6$
- (d) $\sqrt[3]{8} + \sqrt[3]{19}$

uždavinys 5.

- (a) Find 1.5^2 .
- (b) Show that $\sqrt{2.25}$ is a rational number.
- (c) Is $\sqrt{20.25}$ a rational number? Give a reason for your answer.
- (d) Is $\sqrt{1.331}$ a rational number? Give a reason for your answer.

uždavinys 6. Without using a calculator, show that

- (a) $3 < \sqrt[3]{41} < 4$
- (b) $9 < \sqrt[3]{800} < 10$
- (c) $1.1 < \sqrt{1.36} < 1.2$

uždavinys 7. Without using a calculator, find an irrational number between

- (a) 2 and 3
- (b) 6 and 7
- (c) 1.4 and 1.5

uždavinys 8. Without using a calculator, estimate

- (a) $\sqrt{140}$ to the nearest integer
- (b) $\sqrt[3]{350}$ to the nearest integer

uždavinys 9. Arun says:

My calculator shows $2\frac{7}{81} = 2.086419753$ and this does not have a repeating pattern, so $2\frac{7}{81}$ is irrational.

(a) Is Arun correct? Give a reason for your answer.

(b) Do you think $\sqrt{2\frac{7}{81}}$ is a rational number? Give a reason for your answer.

uždavinys 10.

(a) Use a calculator to show that $\sqrt{2} \times \sqrt{32}$ is a rational number.

(b) Find two irrational numbers with a product of

- (i) 6
- (ii) 9
- (iii) 10

uždavinys 11.

- (a) Explain why $5 + \sqrt{2}$ is an irrational number.
- (b) Find two irrational numbers with a sum of 5.
- (c) Explain why it is impossible to find two rational numbers with a sum of $\sqrt{5}$.
- (d) Is it possible to find two rational numbers with a product of $\sqrt{5}$? Give a reason for your answer.

uždavinys 12. This Venn diagram shows all the numbers from a number line. A is the set of integers. B is the set of rational numbers. Copy the diagram and put each of these numbers in the correct place.

25, 5.5, $\frac{5}{19}$, $\sqrt{25}$, $\sqrt[3]{25}$

uždavinys 13. If $n = 20$, find the value of

- (a) (i) $\sqrt{n} + 2$
- (ii) $\sqrt{n} - 2$
- (iii) $(\sqrt{n} + 2)(\sqrt{n} - 2)$

(b) Sofia says:

If n is an integer, then $(\sqrt{n} + 2)(\sqrt{n} - 2)$ is also an integer.

Is Sofia correct? Give some evidence to support your answer.