

Exercises

Task 5.3 If $f(x) = 3x - 2$, compute $f(2)$, $f(0)$, $f(-1)$.

Task 5.4 If $f(x) = 2x + 6$, find the value of x for which a) $f(x) = 6$, b) $f(x) = 4$.

Task 5.5 The cost of renting a car is $f(x) = 14 + 0.12x$ €, where x is a number of kilometres driven.

- What is the cost of renting a car for 60 km trip?
- How much is charged for each additional kilometer?
- If the total rental cost was 23,60 €, how far was the car driven?

Task 5.6 Find the slope and y intercept of each of the following lines:

a) $2y = 6x + 4$, b) $5x - 4y = 20$, c) $2y + 3x = 0$.

Task 5.7 Find the equation of the line which passes through the origin $(0, 0)$ and has slope -2 .

Task 5.8 Find the equation of the line through the points $(2, 4)$ and $(1, -3)$.

Task 5.9 A doctor owns 1,500 € worth of medical books which for tax purposes, are assumed to depreciate at a constant rate over the 10-year period so that at the end of the 10-year period, their value will have been reduced to zero.

- Express the value of the books as a function of time.
- By how much does the value decrease each year?

Task 5.10 Find the point of intersection (if any) of the lines:

- $y = x + 4$ and $y = -2x + 1$,
- $y = 4x + 9$ and $y = 4x - 6$.

Task 5.11 First plumber charges 16 € plus 6 € per half hour. A second charges 21 € plus 4 € per half hour. If only financial considerations are to be taken into account, how should you decide which plumber to call?

Task 5.12 A ship sails from Włocławek to Gdańsk two days, while from Gdańsk to Włocławek it sails six days. How many days does the river flow from Włocławek to Gdańsk?

Task 5.13

a) As a dry air moves upward, it expands and cools. If the ground temperature is 20°C and the temperature at the height of 1 km is 10°C , express the temperature T (in $^\circ\text{C}$) as a function of the height h (in km) assuming the function is linear.



- b) Draw the graph of the function in part a). What does the slope represent?
c) What is the temperature at a height of 2.5 km?

Answers

5.3. $(2) = 4, f(0) = -2, f(-1) = -5$

5.4. $x = 0, x = -1.$

5.5. a) 21.20 €, b) 12 cents, c) 80 kilometers.

5.6. a) $a = 3, b = 2$ b) $a = 1.25, b = -5$ c) $a = -\frac{3}{2}, b = 0.$

5.7. $y = -2x.$

5.8. $y = 7x - 10.$

5.9. 7. a) $y = -150x + 1500$ b) 150 €

5.10. a) $(-1, 3)$ b) none.

5.11. Call the first plumber if work will take less than 75 minutes and call the second if work will take more than 75 minutes.

5.12. 10. 6 days.

5.13. a) $T(h) = -10h + 20$

b) The rate of change of temperature with respect to height.

c) $-5^{\circ}\text{C}.$



Sample chapter exam

1. It is estimated that t years from now, the population of a certain community will be
$$f(t) = 600t + 12000.$$
 - a) What will the population be 8 years from now?
 - b) What is the current population?
 - c) By how much does the population increase each year?
 - d) When will the population be 15000?
2. Find the slope and y intercept of the given lines: $5x - 4y = 20$, $\frac{x}{3} + \frac{y}{4} = 4$.
3. Write an equation for the line with a given properties:
 - a) through $(1, 4)$ and $(5, 0)$;
 - b) through $(-1, 3)$ with slope -5 .
4. Under the provisions of a proposed property tax bill a homeowner will pay 100 € plus 8% of the assessed value of the house. Under the provisions of a competing bill, the homeowner will pay 1900 € plus 2% of the assessed value of the house. If only financial considerations are taken into account, how should a homeowner decide which bill to support?

