

WYPEŁNIA ZDAJĄCY

KOD			PESEL																

miejsce
na naklejkę

**EGZAMIN MATURALNY
Z MATEMATYKI
POZIOM PODSTAWOWY
DODATKOWE ZADANIA W JĘZYKU ANGIELSKIM**

DATA: **21 maja 2020 r.**

GODZINA ROZPOCZĘCIA: **09:00**

CZAS PRACY: **80 minut**

LICZBA PUNKTÓW DO UZYSKANIA: **30**

Instrukcja dla zdającego

1. Sprawdź, czy arkusz egzaminacyjny zawiera 14 stron (zadania 1–21). Ewentualny brak zgłoś przewodniczącemu zespołu nadzorującego egzamin.
2. Rozwiązania i odpowiedzi zapisz w miejscu na to przeznaczonym przy każdym zadaniu.
3. Pisz czytelnie. Używaj długopisu/pióra tylko z czarnym tuszem/atramentem.
4. Nie używaj korektora, a błędne zapisy wyraźnie przekreśl.
5. Pamiętaj, że zapisy w brudnopisie nie będą oceniane.
6. Możesz korzystać z *Wybranych wzorów matematycznych*, cyrkla, linijki oraz kalkulatora prostego.
7. Na tej stronie oraz na karcie odpowiedzi wpisz swój numer PESEL i przyklej naklejkę z kodem.
8. Nie wpisuj żadnych znaków w części przeznaczonej dla egzaminatora.



MMA-R2_1A-202

NOWA FORMUŁA

Task 1. (0–1)

The reciprocal of $3\frac{2}{9} - 5\frac{1}{3} \cdot \sqrt{\frac{49}{144}}$ is:

- A. -9 B. $-\frac{1}{9}$ C. $\frac{1}{9}$ D. 9

Task 2. (0–1)

The product of all solutions of the equation $(x-1)(x+2)(x-3) = 0$ is:

- A. -6 B. -2 C. 2 D. 6

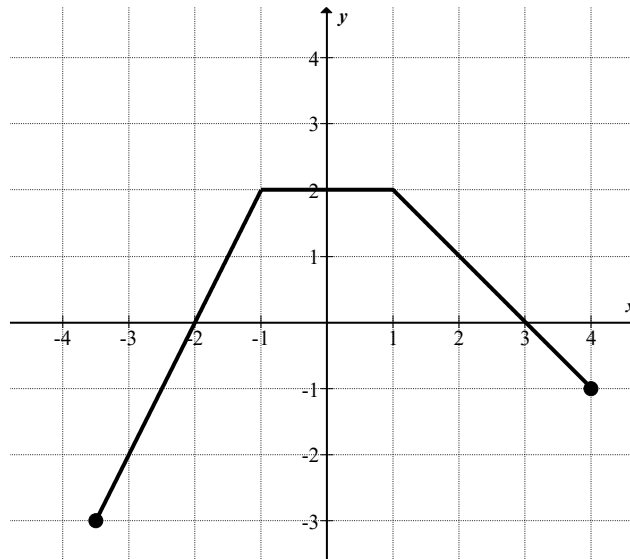
Task 3. (0–1)

If $x + y = 25$ and $x - y = -4$, then $x^2 - y^2$ equals:

- A. -100 B. -29 C. 29 D. 100

Task 4. (0–1)

The graph below shows function f .



Therefore,

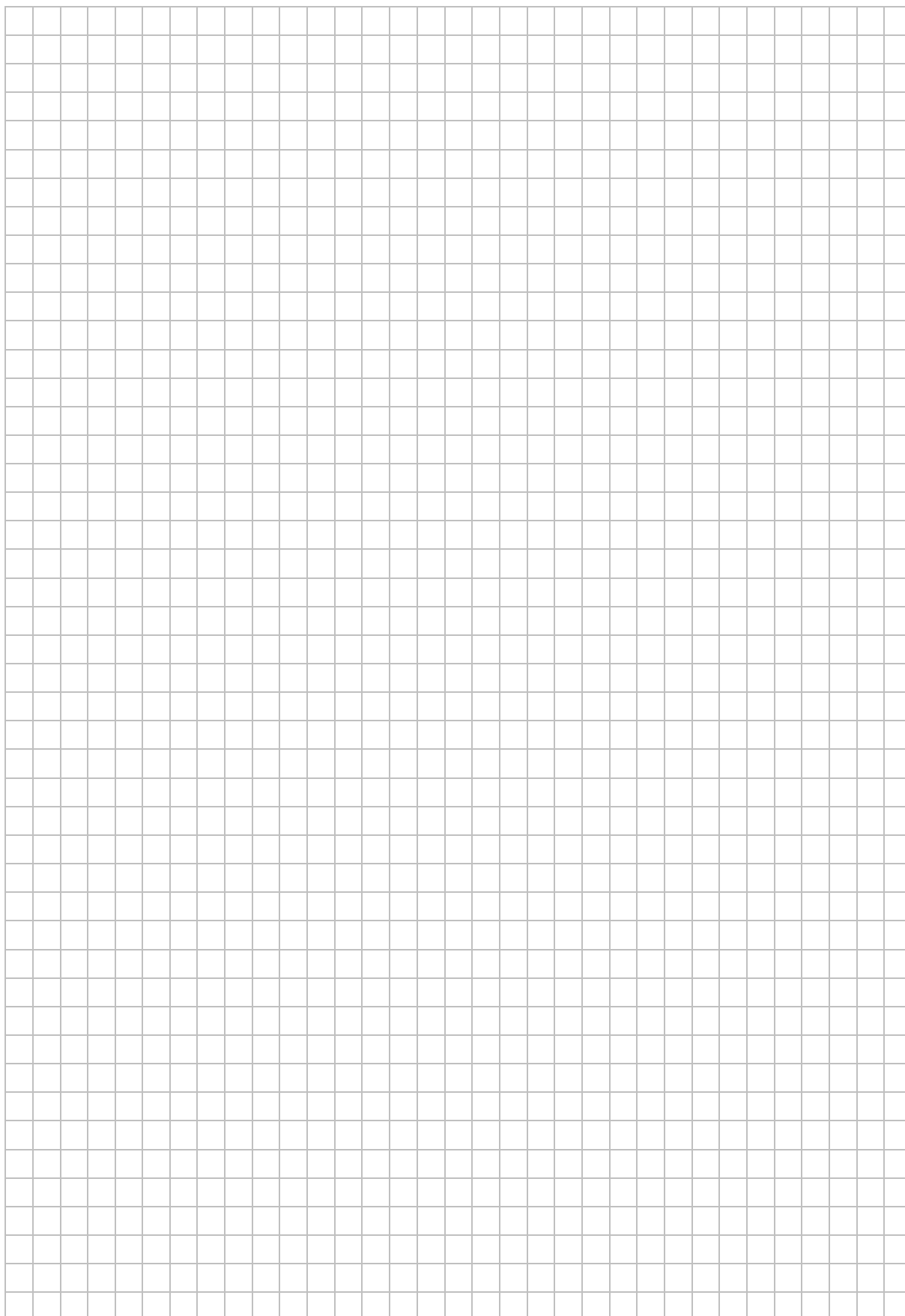
- A. $f(1) - 2 = f(0)$ B. $f(1) - 2 = f(2)$
C. $f(0) - 2 = f(-2)$ D. $f(1) - 2 = f(-1)$

Task 5. (0–1)

The number $\frac{4^8 + 4^7}{320 \cdot 4^4}$ is equal to:

- A. 4^{-1} B. 4^0 C. 4^1 D. 4^2

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Task 6. (0–1)

If $\log_3 5 = 0.68$ then $\log_3 45$ equals:

- A. 1.32 B. 1.36 C. 2.68 D. 6.8

Task 7. (0–1)

The length of the side of a square is reduced by 10 percent. Then, the area of the square will be reduced by:

- A. 9% B. 10% C. 19% D. 81%

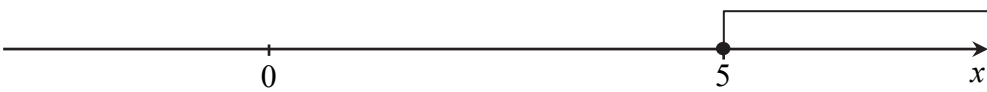
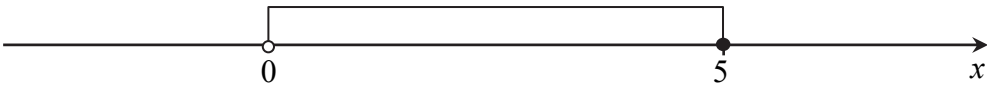
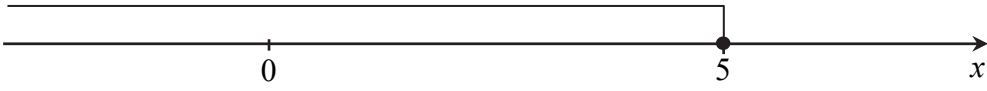
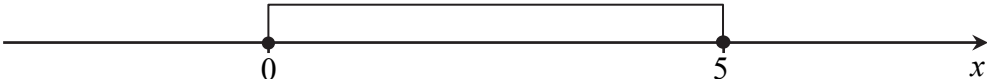
Task 8. (0–1)

The expression $2(x-3) - 5x(3-x)$ can be written as:

- A. $-10x(x-3)$ B. $10x(x-3)$ C. $(5x-2)(x-3)$ D. $(5x+2)(x-3)$

Task 9. (0–1)

The solution set for the inequality $2 - \frac{2}{3}(x-1) \geq -\frac{2}{3}$ is the interval:

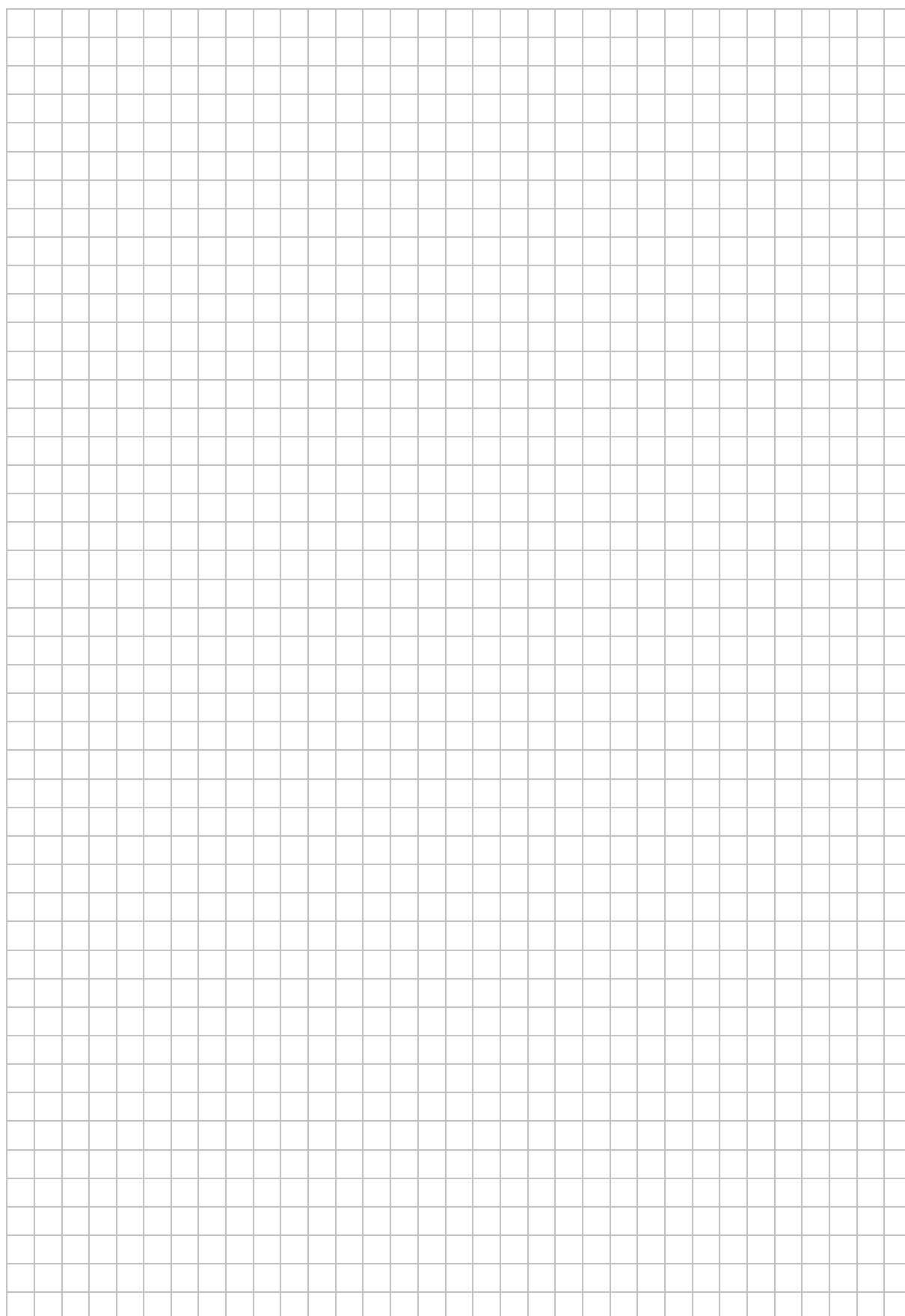
- A. 
- B. 
- C. 
- D. 

Task 10. (0–1)

The function f is given by the formula $f(x) = \left(\frac{9}{4}\right)^x$ for each real number x . For $x = -\frac{3}{2}$, the function f assumes the value of:

- A. $\frac{27}{8}$ B. $\frac{4}{9}$ C. $\frac{8}{27}$ D. $\frac{9}{4}$

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Task 11. (0–1)

The area of a rectangle is 27. One side of this rectangle is 3 times the length of the other side. The perimeter of the rectangle is:

- A. 12 B. 18 C. 24 D. 27

Task 12. (0–1)

The sequence (a_n) is given by the formula $a_n = -n^2 + 14n - 42$ for $n \geq 1$. The number of its positive terms is:

- A. 0 B. 3 C. 5 D. 12

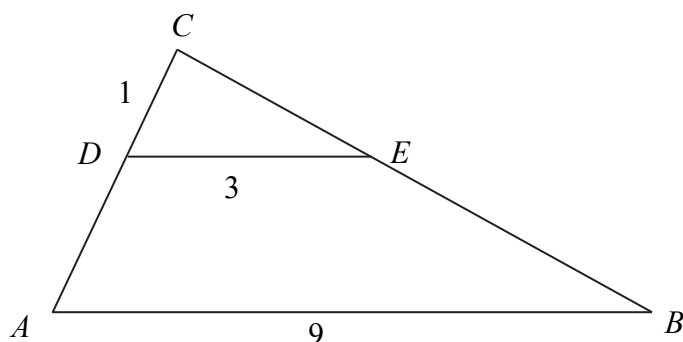
Task 13. (0–1)

In a geometric sequence (a_n) defined for $n \geq 1$, $a_2 = 1$ and $a_3 = 1 + \sqrt{5}$. Therefore, a_1 is equal to:

- A. $\sqrt{5} - 1$ B. $\frac{\sqrt{5} - 1}{4}$ C. $\sqrt{5} + 1$ D. $\frac{\sqrt{5} + 1}{4}$

Task 14. (0–1)

In the triangle ABC , the line segments DE and AB are parallel (refer to the figure below), and $|CD| = 1$, $|DE| = 3$ and $|AB| = 9$.



Hence,

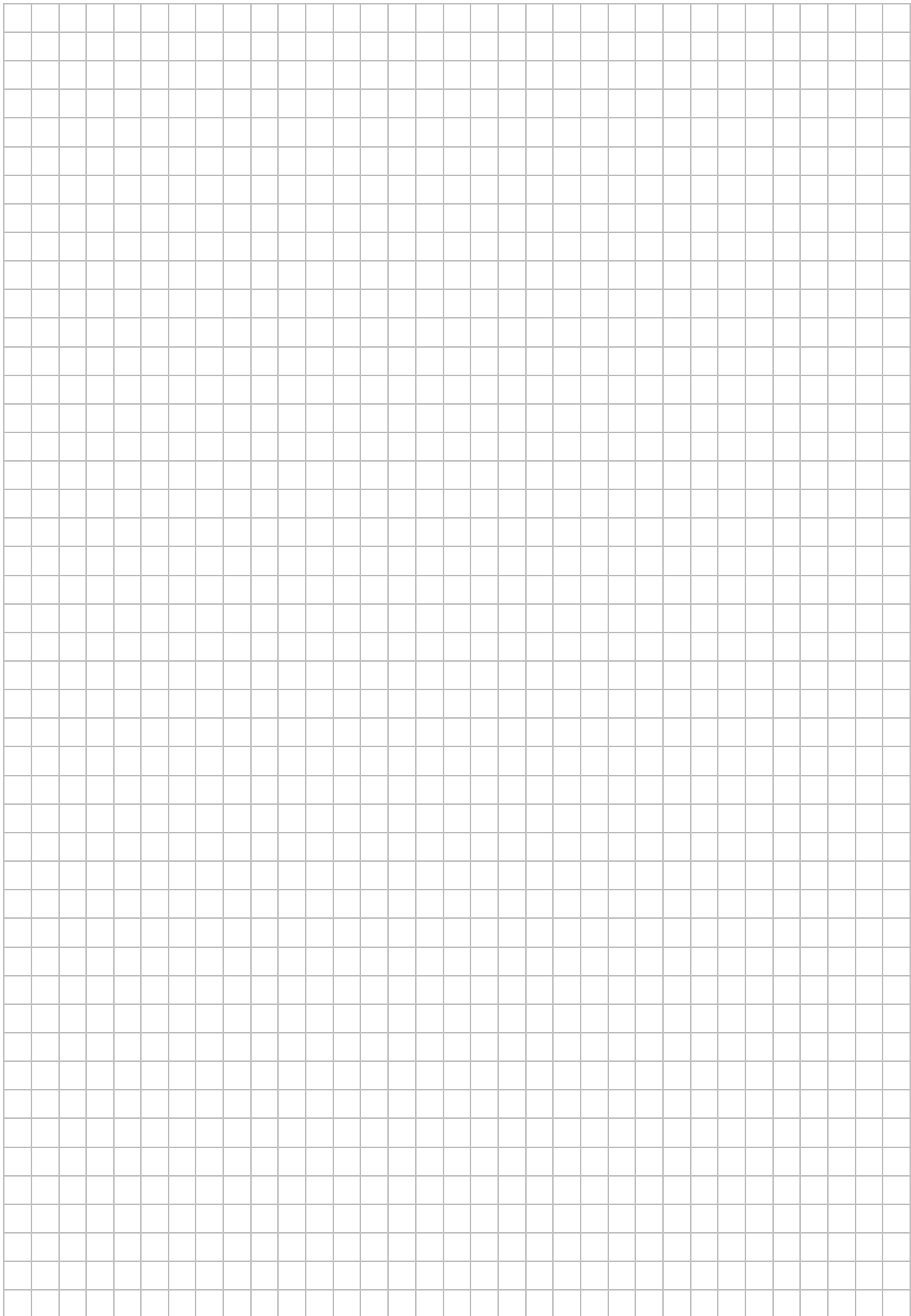
- A. $|AD| = 2$ B. $|AD| = \frac{7}{3}$ C. $|AD| = 3$ D. $|AD| = \frac{10}{3}$

Task 15. (0–1)

In a square based prism, the base edge length is 2, and the height of the prism is $2\sqrt{6}$. The angle between the diagonal of this prism and its base is:

- A. 30° B. 45° C. 60° D. 75°

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Task 17. (0–3)

The quadratic function f is given by the formula $f(x) = -2(x+1)(x-3)$.

Complete the following sentences.

a) The axis of symmetry of the graph of the function f is a line given by the equation

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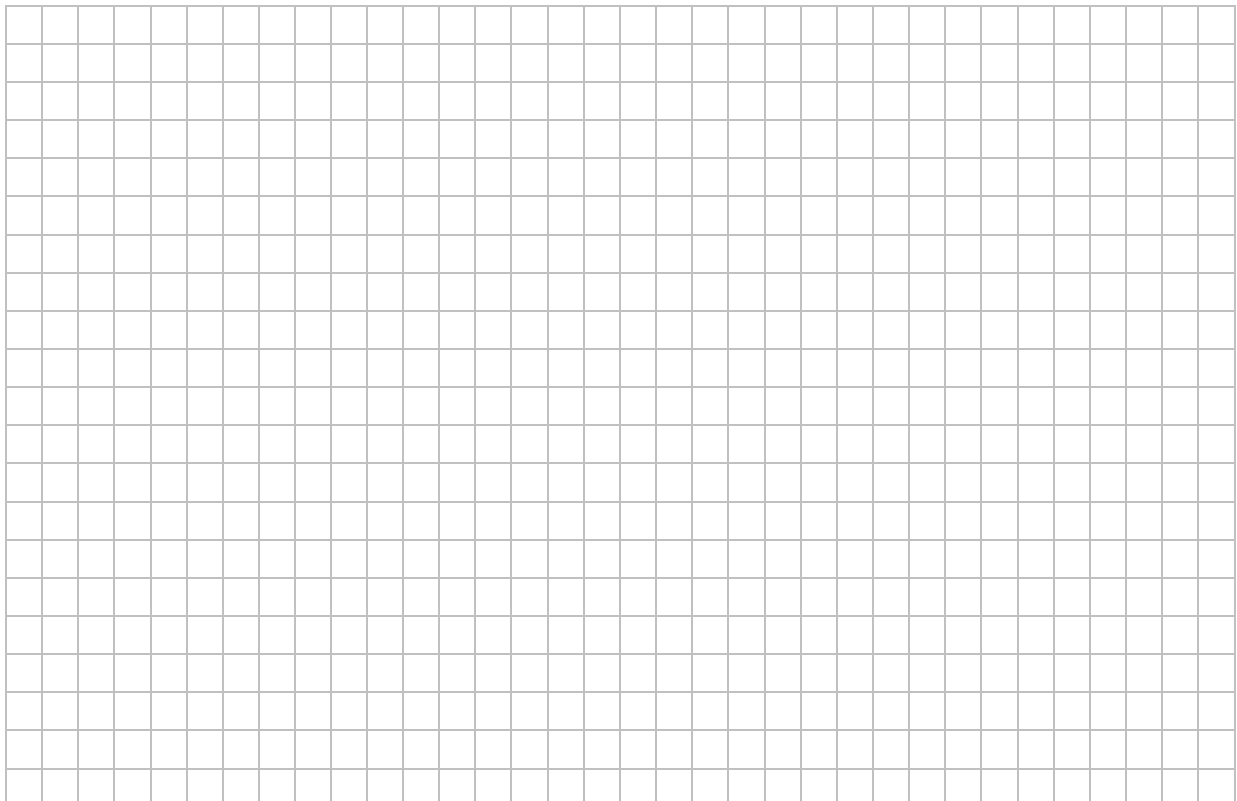
b) The least value of the function f in the interval $\langle -1, 2 \rangle$ equals

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c) The area of a triangle whose vertices are the points of intersection of the graph of the function f with the axes of the coordinate system equals

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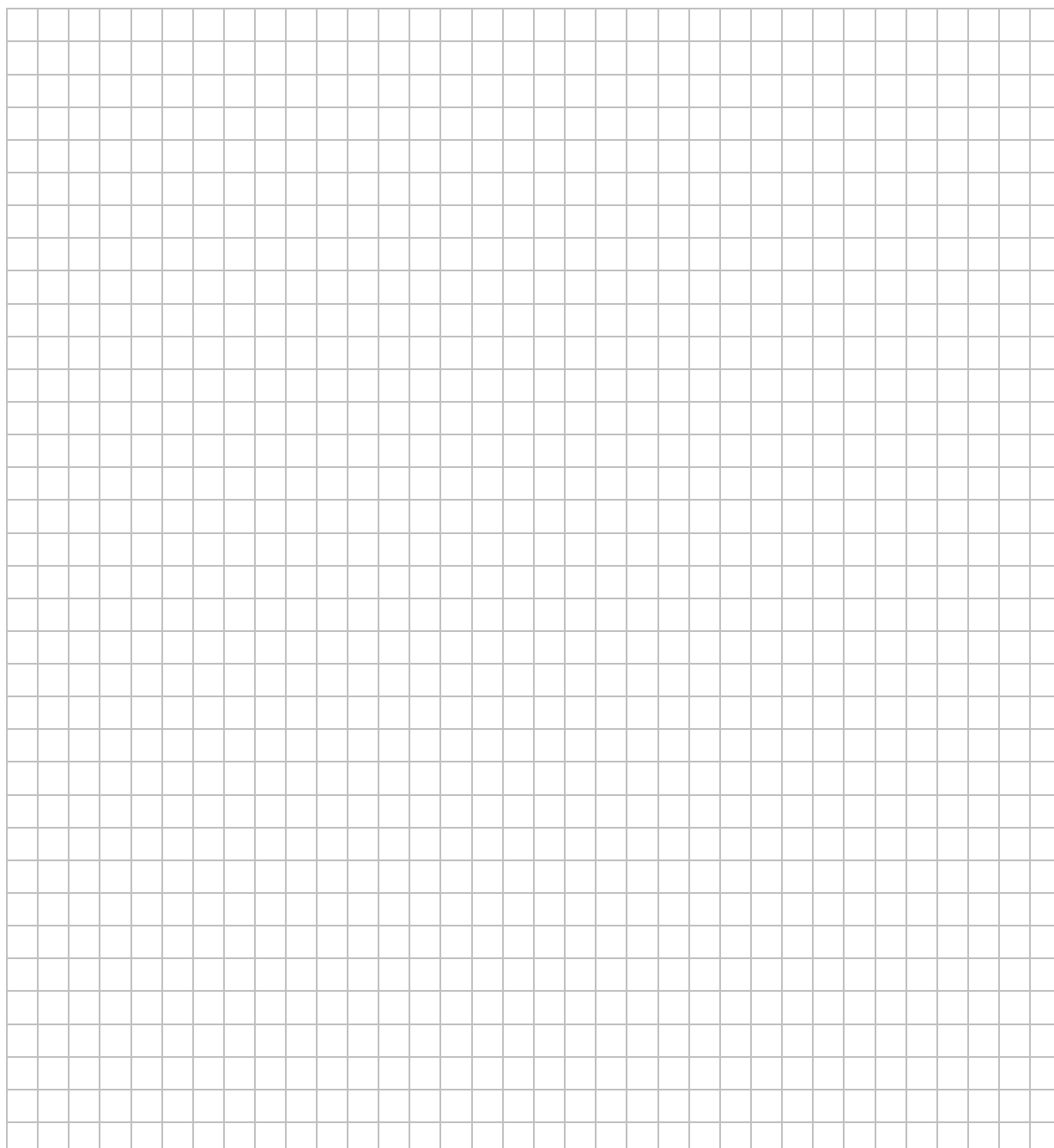


Task 18. (0–2)

The geometrical interpretation of the set of simultaneous equations $\begin{cases} x + y = 2 \\ x + (1 + m)y = 1 \end{cases}$ with the unknowns x and y are:

- a) two parallel lines, when m equals
- b) two perpendicular lines, when m equals

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Task 20. (0–3)

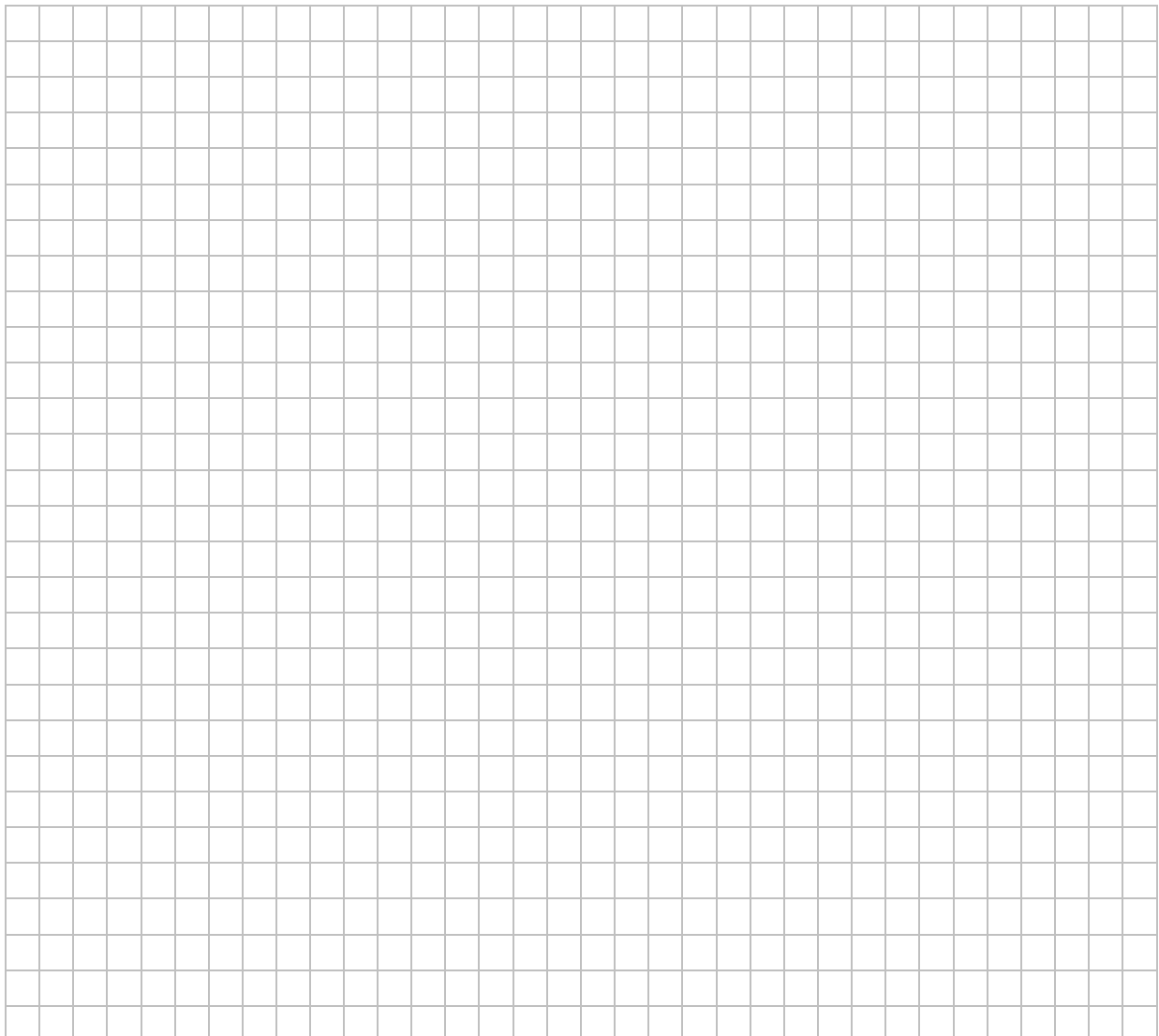
Point $A = (-1, 2)$ is the end point of a line segment AB , whereas point $S = \left(1, \frac{1}{2}\right)$ is the midpoint of the line segment AB . Complete the following sentences.

- a) The coordinates of point B are:

- b) The line segment AB is reflected in x-axis. The coordinates of the endpoints of the image of AB after reflection are:
 $A' = (\dots, \dots)$, $B' = (\dots, \dots)$.

- c) The length of the line segment AB is

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