

Linear Equations, Inequalities and Systems: math test, Grade 11 – download the PDF

Suggested time: 45 minutes. Out of 20 points. Calculator allowed only when the problem says so.

1 Lines and slope

/ 3 pts

Let $A(-2, 5)$ and $B(4, -1)$.

- Find the slope of line AB .
- Write the equation of line AB in slope-intercept form.
- Write the equation of the line parallel to AB through $(0, -4)$.

2 Absolute value

/ 3 pts

Solve: (a) $|2x - 5| = 11$; (b) $|x + 1| \geq 5$.

3 Compound inequalities

/ 3 pts

Solve and write each answer in interval notation: (a) $-9 \leq 2x + 3 < 7$; (b) $4x - 1 < 3$ or $2x + 5 \geq 15$.

4 Concert tickets

/ 3 pts

A school concert sold 220 tickets. Student tickets cost 9 dollars and adult tickets cost 14 dollars. The ticket sales totaled 2,380 dollars.

- Write a system of equations for the number s of student tickets and the number a of adult tickets.
- Solve the system and state how many tickets of each kind were sold.

5 A system of three equations

/ 3 pts

Solve $x + y + z = 9$, $x - y + 2z = 9$, $2x + y - z = 4$.

6 Linear programming

/ 3 pts

Maximize $P = 4x + 5y$ subject to $x + y \leq 10$, $x + 3y \leq 18$, $x \geq 0$, $y \geq 0$.

7 Matrices

/ 2 pts

Let $A = \begin{bmatrix} 4 & 3 \\ 1 & 1 \end{bmatrix}$.

- Find A^{-1} .
- Use it to solve $4x + 3y = 17$ and $x + y = 5$.



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