

ALGEBRA REVIEW

ABSTRACT. This list of problems serves as a representative sample of techniques from algebra that should be familiar to you.

- (1) Simplify $\frac{2}{-5} \cdot \frac{30}{7}$.
- (2) Evaluate $4 - \sin(a) + \cos(a) + b^2$ when $a = \pi$ and $b = -7$.
- (3) Find 5% of 16000.
- (4) Translate “three times the sum of a number squared and five” into a mathematical expression and simplify it.
- (5) Evaluate $(4 + 2)^2 - 3 \cdot 5$.
- (6) Simplify $(-4xy^2)^3$.
- (7) Solve $6 = \frac{3}{-5}x$.
- (8) A rectangle has perimeter 26 ft., and its length is 5 ft. more than its width. Find its dimensions.
- (9) Find an equation of the line with slope 7 and passing through the point $(-2, -3)$.
- (10) Solve $4c + 2 = -7c - 19$.
- (11) Simplify $\frac{1}{x-1} + \frac{1}{x+1}$.
- (12) A goldsmith mixes 20 g of an alloy that is 40% gold with 10 g of another gold alloy. If the resulting alloy is 50% gold, find the percent of gold in the 10 g of alloy.
- (13) Evaluate $|-4| \cdot |2|$.
- (14) Solve the system of equations $\begin{cases} x + y = 17 \\ -2x + 3y = 6 \end{cases}$.
- (15) Simplify the polynomial $(x - 2) \cdot (x^2 + 3x + 3)$.
- (16) Solve $4(x - 1) \leq 2 - 3(4 - x)$.
- (17) Factor $2x^2 + 2x - 40$.
- (18) Find the x -intercept of the line $y = 5x + 7$.
- (19) Simplify $-\sqrt{x^2 - 4x + 4}$.
- (20) Solve $\frac{2}{x+3} = \frac{-7}{x-4}$.