Name Key date

Algebra Review #1

Show all work to receive credit.

1) The sum of $8n^2 - 3n + 10$ and $-3n^2 - 6n - 7$ is

COMBINE LIKE TERMS

$8n^2 - 3n^2 - 3n - 6n + 10 - 7 =$

$\boxed{5n^2 - 9n + 3}$

2) The product of $\frac{4x^2}{7y^2}$ and $\frac{21y^3}{20x^4}$, expressed in simplest form, is

$\frac{4x^2 \cdot 21y^3}{7y^2 \cdot 20x^4} = \frac{x^2 3y^3}{5x^4 y^2}$

DIVIDE OUT COMMON factors

$= \boxed{\frac{3y}{5x^2}}$

3) Simplify: $\frac{4}{3a} - \frac{5}{2a}$

EXPRESS FRACTIONS WITH LIKE DENOMINATORS

$\frac{8}{6a} - \frac{15}{6a} = \frac{8-15}{6a} = \boxed{\frac{-7}{6a}}$

4) If $2y + 2w = x$, then w, in terms of x and y, is equal to

$2w = x - 2y$

SOLVE FOR "W".

$\boxed{w = \frac{x-2y}{2}}$

5) Express $\frac{3x^2 + 9x}{x^2 + 5x + 6} \div \frac{x^2 - 9}{x^2 - x - 6}$ in simplest form.

CHANGE DIVISION TO MULTIPLICATION & TAKE RECIPROCAL OF 2nd fraction, FACTOR, AND DIVIDE OUT COMMON FACTORS.

$\frac{3x\cancel{(x+3)}}{\cancel{(x+3)}\cancel{(x+2)}} \cdot \frac{\cancel{(x-3)}\cancel{(x+2)}}{\cancel{(x+3)}\cancel{(x-3)}}$

$= \boxed{\frac{3x}{(x+3)}}$

6) The difference between two numbers is 28. The larger number is 8 less than twice the smaller number. Find *both* numbers. [Only an algebraic solution can receive full credit.] Let L = large # S = small #

$L - S = 28$

$L = 2S - 8$

SYSTEM OF EQUATIONS & SUBSTITUTION

$2S - 8 - S = 28$

$S - 8 = 28$

$\boxed{S = 36, L = 64}$

7) If the point $(5, k)$ lies on the line represented by the equation $2x + y = 9$, the value of k is

SUBSTITUTE

$2(5) + k = 9$

$10 + k = 9$

$k = -1$

8) Express $2\sqrt{108}$ in simplest radical form.

LARGEST PERFECT SQUARE THAT DIVIDES 108, WHICH IS 36

$2 \cdot \sqrt{36} \cdot \sqrt{3} = 2 \cdot 6 \cdot \sqrt{3} = \boxed{12\sqrt{3}}$

9) The solutions of $x^2 = 16x - 28$ are

REWRITE IN STANDARD FORM & FACTOR

$x^2 - 16x + 28 = 0$

$(x-2)(x-14) = 0$

$\boxed{x = 2 \quad x = 14}$

CHK

$2^2 = 16(2) - 28$

$4 = 4$

$14^2 = 16(14) - 28$

$196 = 196$

10) The expression $\frac{x-3}{x+2}$ is undefined when the value of x is

WHAT VALUE OF X WOULD MAKE THE DENOMINATOR ZERO?

$\boxed{-2}$

11) What is the solution of the equation $\frac{x+2}{2} = \frac{4}{x}$?

CROSS MULTIPLY + FACTOR.

$x(x+2) = 8$

$x^2 + 2x = 8$

$x^2 + 2x - 8 = 0$

$(x+4)(x-2) = 0$

$\boxed{x = -4 \quad x = 2}$

12) What is the slope of the line represented by the equation $4x + 3y = 12$?

CHANGE FROM STANDARD FORM TO SLOPE INTERCEPT. $y = mx + b$

$3y = -4x + 12$

$y = -\frac{4}{3}x + 4$

$\boxed{m = \frac{-4}{3}}$

13) When $2x^2 - 3x + 2$ is subtracted from $4x^2 - 5x + 2$, the result is

$4x^2 - 5x + 2 - (2x^2 - 3x + 2) =$

$4x^2 - 5x + 2 - 2x^2 + 3x - 2 =$

$4x^2 - 2x^2 - 5x + 3x + 2 - 2 =$

$\boxed{2x^2 - 2x}$

14) Solve the inequality $-5(x-7) < 15$ algebraically for x.

DISTRIBUTE & SOLVE

$-5x + 35 < 15$

$-5x < -20$

$5x > 20$

$\boxed{x > 4}$

15) Express $\sqrt{25} - 2\sqrt{3} + \sqrt{27} + 2\sqrt{9}$ in simplest radical form.

$5 - 2\sqrt{3} + \sqrt{9} \cdot \sqrt{3} + 2 \cdot 3 =$

$5 - 2\sqrt{3} + 3\sqrt{3} + 6 =$

$5 + 6 - 2\sqrt{3} + 3\sqrt{3} =$

$\boxed{11 + \sqrt{3}}$

16) Solve algebraically: $\frac{2}{3x} + \frac{4}{x} = \frac{7}{x+1}$

LIKE DENOMINATORS, THEN CROSS MULTIPLY

$\frac{2}{3x} + \frac{12}{3x} = \frac{7}{x+1} \rightarrow$

$\frac{14}{3x} = \frac{7}{x+1} \rightarrow 21x = 14x + 14$

$7x = 14$

$\boxed{x = 2}$