Elementary Algebra Review

Simplify the following, leaving only positive exponents:

1) $\left(\frac{2p^3}{3q^{-4}}\right)^2 \left(3p^{-6}q\right)^0$

2) $(2x - 3)(x^2 - x + 1) - (2x + 5)$

3) $(3x - 5)^2$

4) $\frac{2x^2+7x+6}{6x^2-x-15} \div \frac{9x^2+30x+25}{9x^2-25}$

5) $\frac{2x}{x^2+7x+12} + \frac{8}{x^2+7x+12}$

6) Subtract $6x^2 - 5xy$ from $2x + 3xy$.

7) $\frac{5 + \frac{x}{x-3}}{\frac{2}{x-3}}$

8) $(15x^2 - 8x + 5) \div (3x - 1)$

9) $(2x^3 + 3x^2 - 6x + 5) \div (x - 2)$

Solve the following:

10) $2 + 3(4 + c) = 1 - 3(6 - c)$

11) $x^4 + 5x^2 - 36 = 0$

12) $\frac{3}{a+4} = \frac{2a-1}{a-4} - \frac{24}{a^2-16}$

13) $ax + by = c$, for y

14) $S = \frac{a}{1-R}$, for R

15) $6x = x^3 + x^2$

16) $\frac{2}{3}x - 5 = \frac{5}{12}x + 3(\frac{1}{12}x - 2) + 1$

17) $0.35x - 0.72 = 1.45x - 0.72$

Factor the following completely:

18) $p^2 - pm - 2pn + 2mn$

19) $36x^2 - 84xy + 49y^2$

20) $x^4 - 4x^3 + 27x - 108$

Graph the following:

21) $2x + 5y = 10$

22) $x = -3$

23) $y = -\frac{1}{2}x + 3$

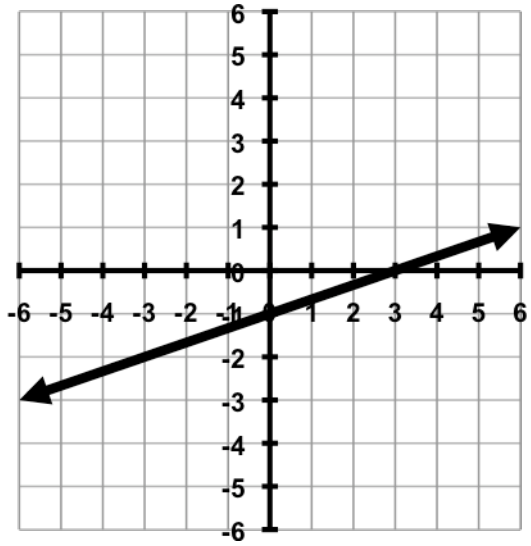
Find the slope and y – intercept of the following lines:

24) $y = -4$

25) $3x + y = -6$

Find the equation of the line:

26)



Solve and graph the following:

27) $6 - 3x \leq -12$

Set - up the equation and solve the following:

28) If a negative integer times three times the next consecutive even negative integer is 72, find the integers.

29) The perimeter of a rectangle is 26 meters. If the length of the rectangle is one more than three times the width, find the dimensions of the rectangle.

30) A shirt that regularly sells for $24 is discounted 25%. Find the sale price.

31) Maricela can change a set of tires on a car in 60 minutes. Ricardo can change the same set in 75 minutes. Working together, how long would it take them to change a set of tires?

32) The length of a rectangle is 3 feet more than twice the width. If the area of the rectangle is 119 square feet, find the dimension of the rectangle.

Answers:

1) $\frac{4p^6q^8}{9}$ 2) $2x^3 - 5x^2 + 3x - 8$ 3) $9x^2 - 30x + 25$ 4) $\frac{x+2}{3x+5}$

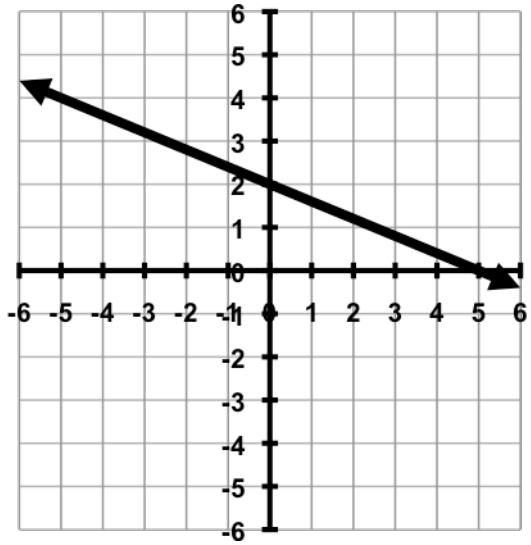
5) $\frac{2}{x+3}$ 6) $-6x^2 + 8xy + 2x$ 7) $\frac{3(2x-5)}{2}$ 8) $5x - 1 + \frac{4}{3x-1}$

9) $2x^2 + 7x + 8 + \frac{21}{x-2}$ 10) No solution 11) $\{-2, 2\}$ 12) $\{2\}$

13) $y = \frac{c-ax}{b}$ 14) $R = \frac{S-a}{S}$ 15) $\{-3, 0, 2\}$ 16) All real numbers 17) $\{0\}$

18) $(p - 2n)(p - m)$ 19) $(6x - 7y)^2$ 20) $(x - 4)(x + 3)(x^2 - 3x + 9)$

21)



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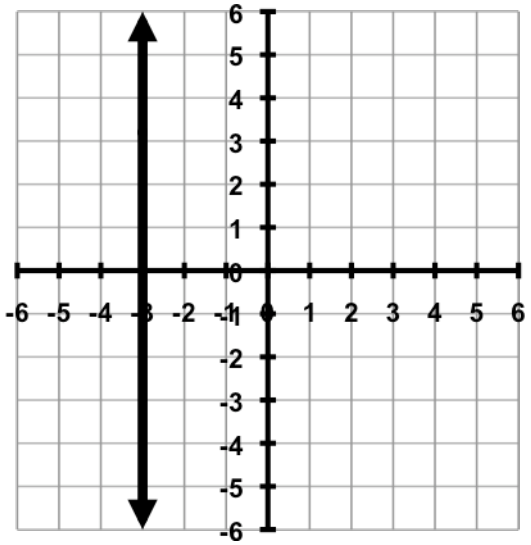

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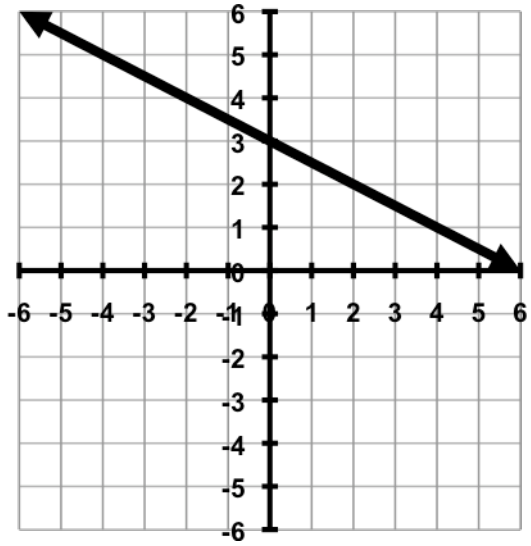
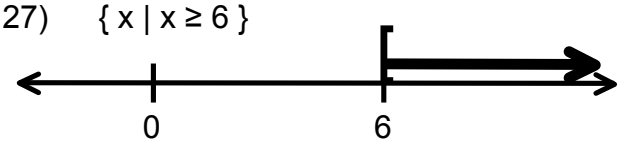


24) m = 0; y-int.: (0, – 4)

25) m = – 3: y-int.: (0, – 6)

26) $y = \frac{1}{3}x - 1$

27) $\{ x \mid x \geq 6 \}$



28) The integers are – 6 & – 4.

29) The length is 10 m and the width is 3 m.

30) The sale price was $18.

31) It took them 33 $\frac{1}{3}$ minutes.

32) The dimensions are 17 ft by 7 ft.