

**Mandatory Summer review for upcoming Precalculus students (2018 – 2019)**

- This worksheet is due on our first class meeting in August 2018
  - Please do not use calculators on any of these problems
  - Write your answers in simplest form
  - Use <https://www.khanacademy.org/math/algebra-home> for extra practice and help
  - Reviewing your Algebra II/Trig during the summer will help you enjoy and succeed in Precalculus
  - Feel free to contact me with questions - [awilson@fredericksburgacademy.org](mailto:awilson@fredericksburgacademy.org)
  - Enjoy your summer vacation!! ☺
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1.

a) Solve  $\frac{1}{12} - \frac{2}{15} = x$  \_\_\_\_\_

b)  $x = 4\frac{2}{3} \div \frac{7}{6}$  \_\_\_\_\_

2. a) Simplify  $\frac{14x-21}{-7}$  \_\_\_\_\_

b)  $\frac{\frac{-2}{7}}{\frac{3}{35}}$  \_\_\_\_\_

c)  $\left(\frac{-1}{4}\right)\left(\frac{7}{3}\right)\left(-\frac{24}{21}\right)$  \_\_\_\_\_

3. Evaluate  $|a - b|$  where  $a = -38$  and  $b = -21$  \_\_\_\_\_

4. Solve

a)  $\frac{-5}{9} = x - \left(-\frac{3}{4}\right)$  \_\_\_\_\_

b)  $3(x - 2) + 1 = 5x - 1$  \_\_\_\_\_

5. Define a variable, write an equation and solve the following problem:

The length of a rectangle is 10 more than three times the width. The perimeter of the rectangle is 108 ft. Find the dimensions of the rectangle.

Equation \_\_\_\_\_

Length \_\_\_\_\_

Width \_\_\_\_\_

6. Solve  $-\frac{1}{5} = \frac{3}{2x-1}$  \_\_\_\_\_

7. Solve  $|2x + 5| = 6$  \_\_\_\_\_

8. Solve  $|3x - 2| \geq 4$

\_\_\_\_\_

9. Solve  $|7x + 1| < 4$

\_\_\_\_\_

10. Simplify

a)  $\left(-\frac{12}{7}x^3\right)\left(\frac{14}{5}y^2\right)(x^2y)$

\_\_\_\_\_

b)  $(-7x^3y^4)^3$

\_\_\_\_\_

c)  $\frac{(3a^{-2}b^3)^0}{(a^3b^{-4})}$

\_\_\_\_\_

11. Find the product  $(5x - 3)(2x + 1)$

\_\_\_\_\_

12. Find the GCF of  $24x^5y^3$  and  $90x^4z$

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13. Factor each polynomial

a)  $10a^2 + a - 2$

\_\_\_\_\_

b)  $15x^2y - 5x^2 + 3y - 1$

\_\_\_\_\_

c)  $x^3 - 25xy^2$

\_\_\_\_\_

d)  $36x^2 + 60xy + 25y^2$

\_\_\_\_\_

14. Solve  $x^2 + 54 = 15x$

\_\_\_\_\_

15. Solve  $2x^2 - 5x + 4 = 0$  by using the quadratic formula

\_\_\_\_\_

16. Simplify  $(\sqrt{6} + \sqrt{2})(\sqrt{6} - \sqrt{2})$

\_\_\_\_\_

17. Simplify  $(-2\sqrt{3})(5\sqrt{6})$

\_\_\_\_\_

18. Simplify  $\sqrt{18} - \sqrt{50} + \sqrt{12} - \sqrt{75}$

\_\_\_\_\_

19. Rationalize the denominator and simplify  $\frac{\sqrt{3}-1}{\sqrt{3}+1}$

\_\_\_\_\_

20. If  $f(x) = x - 1$  and  $g(x) = x^2 + 1$ , find  $g(f(x))$

\_\_\_\_\_

21. Simplify  $\frac{2}{2x-3} + \frac{-3}{2x^2-3x}$

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22. Find the slope-intercept equation of the line passing through (3, -2) and (-7, 1)

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23. What is the slope of the line perpendicular to  $4x - 3y = 9$ ?

\_\_\_\_\_

24. What is the slope of the line parallel to  $7x + 2y = 1$ ?

\_\_\_\_\_

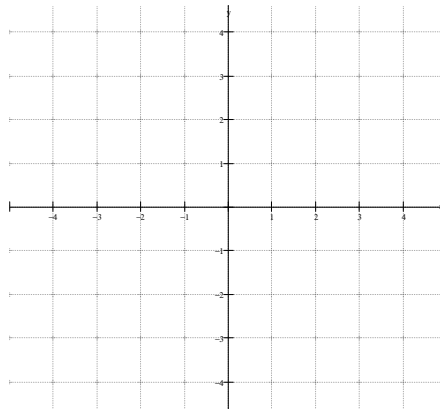
25. What is the equation of a vertical line passing through (4, -1)?

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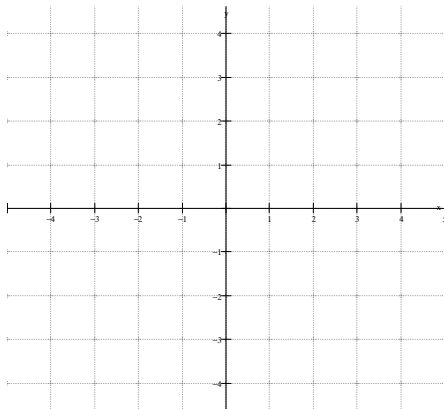
26. What is the equation of a horizontal line passing through (3, 9)?

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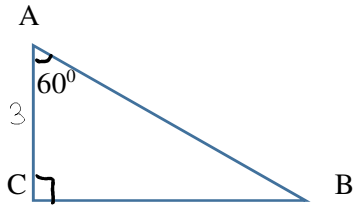
27. Graph  $2x - 3y - 6 = 0$



28. Graph  $y = 2x^2 + 4x + 5$



29. Solve the right triangle ABC using the special right triangle formulae.

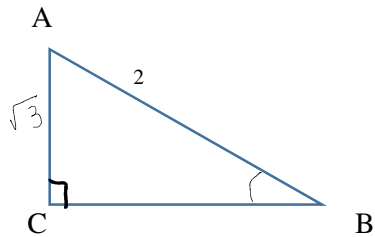


$$\angle ABC = \underline{\hspace{2cm}}$$

$$a = \underline{\hspace{2cm}}$$

$$c = \underline{\hspace{2cm}}$$

30. Solve the right triangle ABC using the special right triangle formulae.



$$\angle ABC = \underline{\hspace{2cm}}$$

$$\angle BAC = \underline{\hspace{2cm}}$$

$$a = \underline{\hspace{2cm}}$$

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Please have the following formulae memorized. If I give you the expression (or something similar) on the left, you need to quickly give me the equivalent expression on the right and conversely.

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$(a - b)^2 = a^2 - 2ab + b^2$$

$$(a + b)(a - b) = a^2 - b^2$$