

CHRISTOPHER COLUMBUS
A Marist Brothers High School 1958

Summer Assignment Mathematics
Students entering Algebra 2 &
Trigonometry--HONORS
(Juniors)

Directions:

- Print the document
- Show all work neatly.
- If the concepts in a particular section are more challenging, you may want to seek additional resources for extra practice.

Grading and Mastery Testing:

- Late assignments will be accepted but will be penalized based on the number of days the assignment is late.
- The first two days of class students may ask questions and the teacher will review the summer assignment.
- At the end of the first week students will be expected to take a mastery test that will consist of problems similar to those in the summer assignment.
- Any student who does not earn a grade of at least 80% on the mastery test will be expected to do remediation problems for the first quarter along with the required Algebra 2 & Trigonometry--HONORS coursework.

Required Content:

- Order of operation
- Simplify expressions
- Multiplying Binomials
- Solving equations
- Graphing on a number line and interval notation
- Absolute Value Equations and Inequalities
- Graphing lines and Writing equations of lines
- Factoring (GCF)
- Right Triangle (Basic)
- Rule of Exponents

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the equation.

1) $6(x + 5) = 7[x - (3 - x)]$ 1) _____

A) $\{\frac{15}{4}\}$

B) $\{\frac{51}{8}\}$

C) $\{-\frac{51}{8}\}$

D) $\{-\frac{15}{4}\}$

2) $\frac{5x + 8}{6} + 1 = -\frac{7x}{2}$ 2) _____

A) $\{\frac{1}{13}\}$

B) $\{-\frac{7}{13}\}$

C) $\{-\frac{1}{13}\}$

D) $\{\frac{7}{8}\}$

3) $x(1 + 3x) = (3x - 1)(x - 3)$ 3) _____

A) $\{-\frac{3}{121}\}$

B) $\{\frac{3}{11}\}$

C) $\{-\frac{3}{11}\}$

D) $\{\frac{3}{121}\}$

Solve the formula for the indicated variable.

4) $S = 2\pi rh + 2\pi r^2$ for h 4) _____

A) $h = \frac{S - 2\pi r^2}{2\pi r}$

B) $h = \frac{S}{2\pi r} - 1$

C) $h = S - r$

D) $h = 2\pi(S - r)$

5) $A = P(1 + rt)$ for t 5) _____

A) $t = \frac{P - A}{rP}$

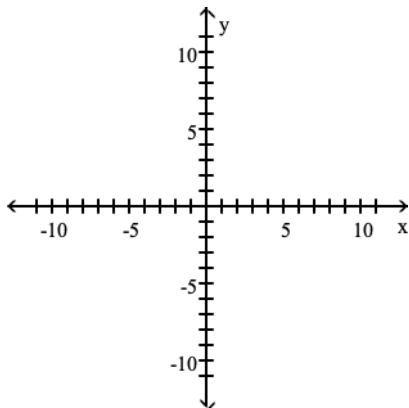
B) $t = \frac{A + P}{rP}$

C) $t = -\frac{A + P}{rP}$

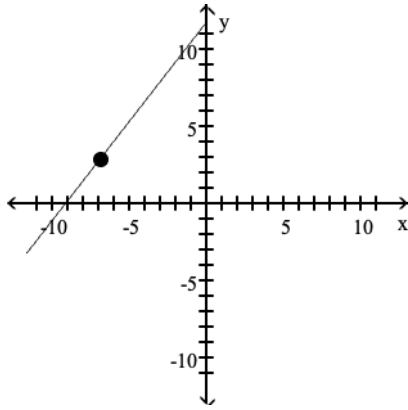
D) $t = \frac{A - P}{rP}$

Graph the line containing the point P and having slope m.

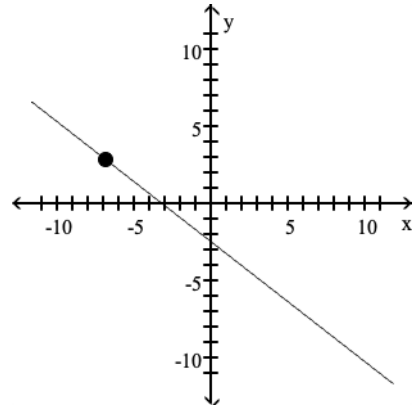
6) $P = (-7, 3); m = -\frac{7}{9}$ 6) _____



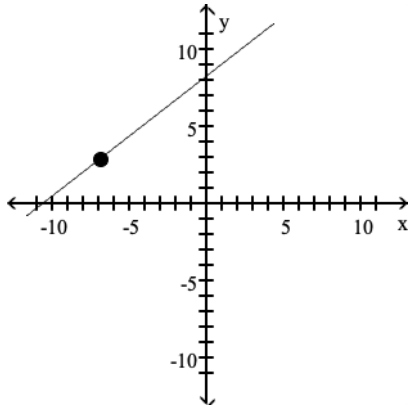
A)



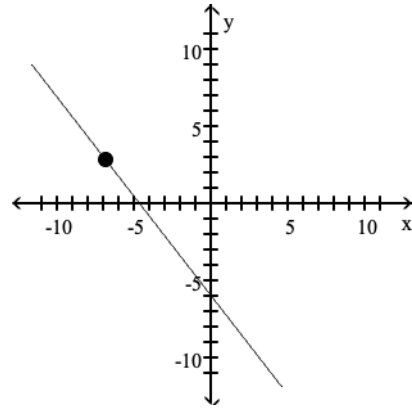
B)



C)



D)



Find the slope-intercept form of the equation of the line with the given properties.

7) Containing the points (4, -1) and (-4, -4)

7) _____

A) $y + 1 = \frac{3}{8}(x - 4)$

B) $y = \frac{3}{8}x - \frac{5}{2}$

C) $y = -\frac{3}{8}x - \frac{5}{2}$

D) $y = \frac{8}{3}x - \frac{5}{2}$

Find the special product.

8) $(5x^2 + 4y)^2$

8) _____

A) $25x^4 + 20x^2y + 16y^2$

B) $25x^4 + 41x^2y + 16y^2$

C) $25x^2 + 40x^2y + 16y^2$

D) $25x^4 + 40x^2y + 16y^2$

9) $(7x + 3y)^2$

9) _____

A) $7x^2 + 9y^2$

B) $49x^2 + 42xy + 9y^2$

C) $49x^2 + 9y^2$

D) $7x^2 + 42xy + 9y^2$

10) $\left(x - \frac{8}{9}\right)^2$

10) _____

A) $x^2 - \frac{8}{9}x - \frac{16}{9}$

B) $x^2 - \frac{8}{9}x + \frac{64}{81}$

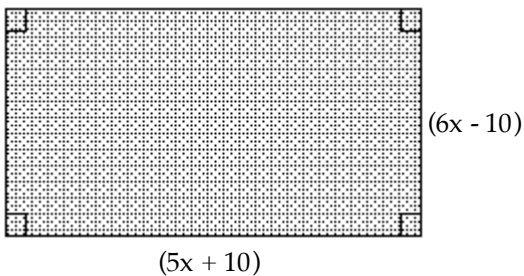
C) $x^2 + \frac{64}{81}$

D) $x^2 - \frac{16}{9}x + \frac{64}{81}$

Find the area of the shaded region.

11)

11) _____



A) $30x^2 + 10x + 100$

B) $30x^2 + 110x - 100$

C) $30x^2 + 10x - 100$

D) $30x^2 - 50x - 100$

Find the product.

12) $(2y + 7)(4y + 5)$

12) _____

A) $8y^2 + 35$

B) $6y^2 + 12$

C) $8y^2 - 18y + 35$

D) $8y^2 + 38y + 35$

Find the value of the expression if $x = -2$, $y = 3$, and $z = -4$.

13) $3x + 4y + 8z$

13) _____

A) -16

B) -26

C) -31

D) 2

Simplify the expression. Assume that the variables in the denominator are nonzero.

14) $\left(\frac{20a^7b^6}{ab^3}\right)\left(\frac{2b^2}{4a^3b^8}\right)$

14) _____

A) $\frac{1}{10a^3b^3}$

B) $10a^3b^3$

C) $\frac{5a^3}{b^3}$

D) $\frac{10a^3}{b^3}$

Solve the equation. Check your solution.

15) $\frac{17}{14}x + \frac{2}{7} = \frac{8}{7}x$

15) _____

A) {20}

B) {4}

C) {-20}

D) {-4}

Evaluate the expression.

16) $25 - [6 - (3 - 9)] + (5 - 7)^3$

16) _____

A) -21

B) 21

C) 5

D) 33

Solve the equation. Check your solution.

17) $\frac{-2x+5}{6} + 1 = -\frac{7x}{2}$

17) _____

A) $\left\{-\frac{1}{19}\right\}$

B) $\left\{\frac{11}{23}\right\}$

C) $\left\{\frac{1}{19}\right\}$

D) $\left\{-\frac{11}{19}\right\}$

Simplify the algebraic expression.

18) $\frac{1}{5}(10x^2 + 10) - 7x^2 + 10x$

18) _____

A) $-5x^2 + 10x + 2$

B) $-5x^2 + 12x$

C) $5x^2 + 2$

D) $9x^2 + 10x + 10$

19) $4(9a + 10b) - (10a - 7b)$

19) _____

A) $46a + 47b$

B) $26a + 33b$

C) $26a + 17b$

D) $26a + 47b$

Evaluate the expression.

20) $8 \cdot 5 - 5(4)^3 \div (-8)$

20) _____

A) 80

B) 35

C) 1040

D) -280

21) $24 - [9 - (4 - 10)] + (1 - 3)^3$

21) _____

A) 29

B) -17

C) 1

D) 17

Reduce the rational expression to lowest terms.

22) $\frac{4x-20}{25-5x}$

22) _____

A) 1

B) $-\frac{4}{5}$

C) -1

D) $\frac{4}{5}$

Solve the inequality algebraically. Write the solution in interval notation.

23) $\left|\frac{x-5}{3}\right| \leq 4$

23) _____

A) $[-7, 17]$

B) $(-\infty, -7) \cup (17, \infty)$

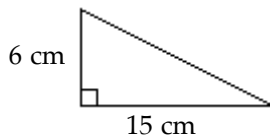
C) $(-7, 17)$

D) $(-\infty, -7] \cup [17, \infty)$

Find the hypotenuse. If necessary, round to the nearest tenth.

24)

24) _____



A) 10.5 cm

B) 261 cm

C) 130.5 cm

D) 16.2 cm

Simplify the expression. Assume that the variables in the denominator are nonzero.

25) $\left(\frac{3}{xy^2}\right)^{-3}$ 25) _____

A) $\frac{x^3y^3}{27}$ B) $\frac{27}{x^3y^6}$ C) $\frac{x^3y^6}{3}$ D) $\frac{x^3y^6}{27}$

Solve the inequality algebraically. Write the solution in interval notation.

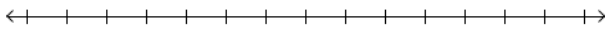
26) $|6x - 5| \geq 7$ 26) _____

A) $[-\frac{1}{3}, 2]$ B) $(-\infty, -\frac{1}{3}] \cup [2, \infty)$

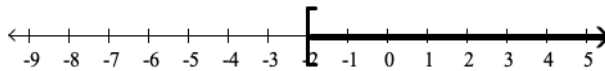
C) $(-\infty, -2] \cup [7, \infty)$ D) $[2, \infty)$

Solve the inequality. Express your answer using interval notation. Graph the solution set.

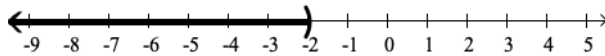
27) $5x - 7 \leq 4x - 9$ 27) _____



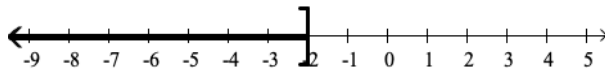
A) $[-2, \infty)$



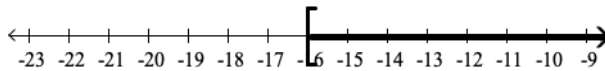
B) $(-\infty, -2)$



C) $(-\infty, -2]$



D) $[-16, \infty)$



Simplify the expression. Assume that the variables in the denominator are nonzero.

28) $\frac{(x^{-3}y^3)^{-4}}{(y^3x^{-5})^{-5}}$ 28) _____

A) $\frac{y^3}{x^{13}}$ B) $\frac{x^8}{y^3}$ C) $\frac{y^3}{x^8}$ D) $\frac{x^{13}}{y^3}$

Simplify the expression.

29) $(-4x^5y^7z)^2$ 29) _____

A) $-16x^{10}y^{14}z^2$ B) $16x^{10}y^{14}z^2$ C) $8x^{10}y^{14}z^2$ D) $-4x^7y^9z$

Simplify by combining like terms. Express your answer as a single polynomial in standard form.

30) $(5m + 11m^3) - (-8 - 7m - 5m^3)$ 30) _____
 A) $16m^3 + 12m - 8$ B) $6m^3 + 12m + 8$
 C) $6m^3 + 12m - 8$ D) $16m^3 + 12m + 8$

31) $(5x^6 - 15x^5 - 18) - (7x^6 + 5x^5 - 6)$ 31) _____
 A) $-2x^6 - 20x^5 - 24$ B) $-34x^{11}$
 C) $-2x^6 - 20x^5 - 12$ D) $-2x^6 - 8x^5 - 24$

32) $(-\frac{3}{5}x^2 + \frac{2}{3}x - \frac{1}{4}) + (-\frac{3}{4}x^2 + \frac{3}{4}x + \frac{1}{5})$ 32) _____
 A) $-\frac{27}{20}x^4 + \frac{17}{12}x^2 - \frac{1}{20}$ B) $-\frac{27}{20}x^2 + \frac{17}{12}x - \frac{1}{20}$
 C) $\frac{1}{15}x^6 - \frac{1}{20}$ D) $\frac{9}{2}x^2 + 5x - \frac{1}{2}$

Solve the inequality. Express your answer using interval notation. Graph the solution set.

33) $|5x - 1| \geq 5$ 33) _____
 A) $(-\infty, -\frac{4}{5})$ or $(\frac{6}{5}, \infty)$ B) $(-\infty, -\frac{4}{5}]$ or $[\frac{6}{5}, \infty)$
 C) $[-\frac{4}{5}, \frac{6}{5}]$ D) $(-\frac{4}{5}, \frac{6}{5})$

Factor the GCF from the polynomial.

34) $40x^8y^7 + 80x^2y^5 + 80x^4y^3$ 34) _____
 A) $40x^2(1x^6y^7 + 2y^5 + 2x^2y^3)$ B) $40x^2y^3(1x^6y^4 + 2y^2 + 2x^2)$
 C) $x^2y^3(40x^6y^4 + 80y^2 + 80x^2)$ D) $40(1x^8y^7 + 2x^2y^5 + 2x^4y^3)$

35) $32x^3y + 28xy^5$ 35) _____
 A) $4x(8x^2y + 7y^5)$ B) $xy(32x^2 + 28y^4)$
 C) $4xy(8x^2 + 7y^4)$ D) $4y(8x^3 + 7xy^4)$

Divide.

36) $\frac{-12x^7 + 24x^5 - 18x^3}{-6x^5}$ 36) _____
 A) $2x^2 - 4 + \frac{3}{x^2}$ B) $2x - 4 + \frac{3}{x^2}$ C) $2x - 4 + \frac{3}{x}$ D) $2x^2 - 4 + \frac{3}{x}$

Factor the GCF from the polynomial.

37) $9x^8y^4z - 15x^7y^3$ 37) _____
 A) $3xy(3x^7y^7z - 5x^6y^2)$ B) $3x^7y^3(3xyz - 5)$
 C) $x^7y^3(9xyz - 15)$ D) $3x^7y^3z(3xy - 5)$

Simplify. The exponents in the answer should be positive integers.

38) $(-4p^{-4}q)(3p^{-6}q^{-3})\left(\frac{1}{24}p^{12}\right)$

38) _____

A) $-\frac{p^2}{2q^2}$

B) $\frac{p^{288}}{2q^3}$

C) $\frac{p^2}{2q^2}$

D) $-\frac{p^2}{32q^2}$

Factor the GCF from the polynomial.

39) $30x^4y + 54xy^5$

39) _____

A) $6x(5x^3y + 9y^5)$

B) $6y(5x^4 + 9xy^4)$

C) $6xy(5x^3 + 9y^4)$

D) $xy(30x^3 + 54y^4)$

Solve the inequality. Express your answer using interval notation. Graph the solution set.

40) $|8x - 6| - 5 > -14$

40) _____

A) $(-\infty, -\frac{3}{8}) \text{ or } (\frac{15}{8}, \infty)$

B) $(-\frac{3}{8}, \frac{15}{8})$

C) $(-\infty, \infty)$

D) no solution

Divide.

41) $\frac{18r^7 - 30r^3}{6r}$

41) _____

A) $3r^6 - 5r^2$

B) $3r^8 - 5r^4$

C) $18r^6 - 30r^2$

D) $3r^7 - 5r^3$

Simplify. The exponents in the answer should be positive integers.

42) $(-5x^5y^{-6})(2x^{-1}y)$

42) _____

A) $-10x^4y^7$

B) $\frac{-3x^4}{y^5}$

C) $\frac{-10x^6}{y^7}$

D) $\frac{-10x^4}{y^5}$

Find the product.

43) $(5x^2 - 4x + 1)(x^2 + 4x + 4)$

43) _____

A) $5x^4 + 20x^3 + 4x^2 - 12x + 4$

B) $5x^4 + 16x^3 + 5x^2 - 12x + 4$

C) $5x^4 + 16x^3 + 4x^2 - 12x + 4$

D) $5x^4 + 20x^3 + 5x^2 - 12x + 4$

Solve the equation.

44) $|2x + 3| + 2 = 8$

44) _____

A) $\{\frac{3}{2}, -\frac{9}{2}\}$

B) $\{-\frac{3}{2}, \frac{9}{2}\}$

C) $\{1, -3\}$

D) no solution

Find the product.

45) $(7x - 1)(x^2 - 4x + 1)$

45) _____

A) $7x^3 - 29x^2 + 11x - 1$

B) $7x^3 - 28x^2 + 7x + 1$

C) $7x^3 - 27x^2 + 3x - 1$

D) $7x^3 + 29x^2 - 11x + 1$

46) $(3x + 8)(x + 5)$

A) $x^2 + 40x + 23$

C) $3x^2 - 46x + 40$

B) $3x^2 + 23x + 40$

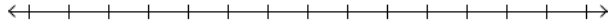
D) $x^2 + 23x - 46$

46) _____

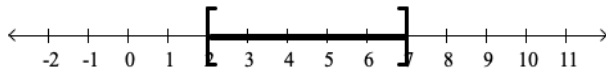
Solve the inequality. Express your answer using interval notation. Graph the solution set.

47) $-34 \leq -5x + 1 \leq -9$

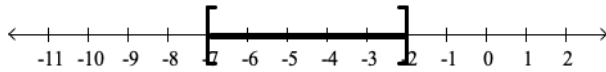
47) _____



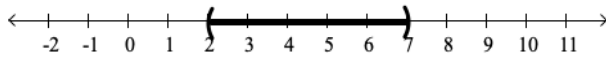
A) $[2, 7]$



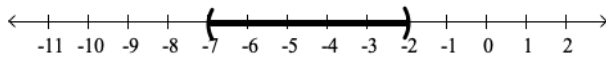
B) $[-7, -2]$



C) $(2, 7)$

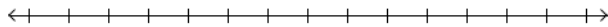


D) $(-7, -2)$

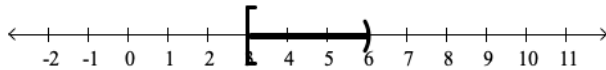


48) $-20 \leq -3x - 2 < -11$

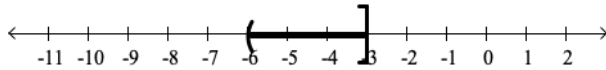
48) _____



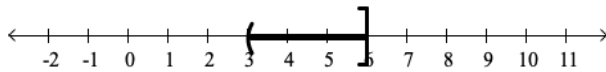
A) $[3, 6)$



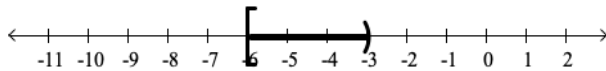
B) $(-6, -3]$



C) $(3, 6]$

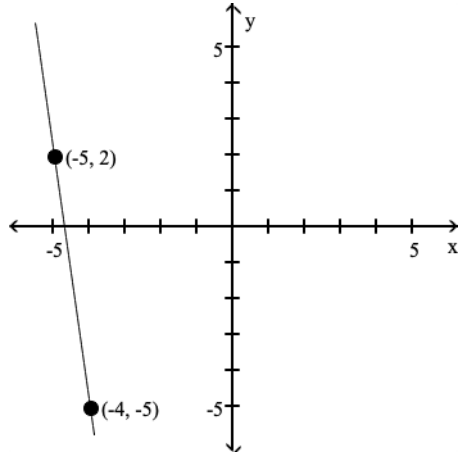


D) $[-6, -3)$



Find the equation of the line in slope-intercept form.

49)



49) _____

A) $y = -7x + 33$

B) $y = -7x + 9$

C) $y = -7x - 33$

D) $y = -\frac{1}{7}x - \frac{7}{33}$

Find the general form of the equation for the line with the given properties.

50) slope = $\frac{2}{3}$; y-intercept = $\frac{8}{3}$

50) _____

A) $2x + 3y = -8$

B) $y = \frac{2}{3}x + \frac{8}{3}$

C) $2x - 3y = -8$

D) $y = \frac{2}{3}x - \frac{8}{3}$