

NAME: _____ SOLUTION _____

There are 22 questions. Some are multiple choice and some are free response.
 Each question is worth 5 points over 100 (so 10 points are extra credit).
 For multiple-choice questions, just circle your answer.
 For free-response questions, SHOW ALL WORK to receive credit.

1. Find the x and y intercepts of the graph of the equation $y = x + 6$.

Solution:

The x intercept is: -6

The y intercept is: 6

2. Given the function $f(x) = 3x^2 + 5x - 2$, calculate the following values:

Solution:

• $f(0) =$ -2

• $f(2) =$ 20

• $f(-2) =$ 0

• $f(x + 1) =$ $3(x + 1)^2 + 5(x + 1) - 2$

• $f(-x) =$ $3x^2 - 5x - 2$

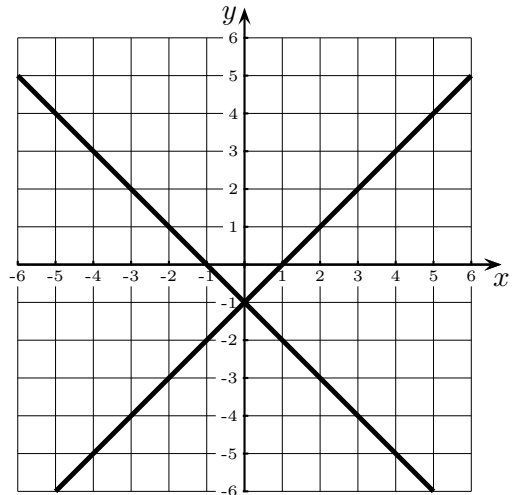
3. Solve the following system of equations.

$$\begin{cases} -3x + 2y = -10 \\ -5x + 3y = -17 \end{cases}$$

Solution: (4, 1).

4. The graphs of two linear equations in a system is shown below.

Find the solution of the system of equations. If there is no solution or there are infinitely many solutions, write it.



Solution: (0, -1).

5. Subtract: $(6x^2 + 4x - 4) - (-7x^2 - 4x - 5)$

Solution: $13x^2 + 8x + 1$.

6. Add: $(7x^3 - 4x^2 + 4x - 2) + (5x^3 - 7x^2 + x - 6)$

Solution: $12x^3 - 11x^2 + 5x - 8$

7. Subtract: $(3t^7 + 6t^5 - t^3 - 1) - (5t^7 - 3t^5 + 2t^3 + 3)$

Solution: $-2t^7 + 9t^5 - 3t^3 - 4$

8. What is the solution to the following system of equations?

$$\begin{cases} -2x + 4y = -21 \\ -8x + 16y = -72 \end{cases}$$

Circle the answer.

Solution:

(a) No solution

(b) $(3, 0)$

(c) Infinitely many solutions

(d) $(7, -4)$

9. For the polynomial $x^2 + x^5 - 3x - 5$,
a) Determine the coefficient and the degree of each term.

Solution:

Term	Coefficient	Degree
x^2	1	2
x^5	1	5
$-3x$	-3	1
-5	-5	0

- b)
The degree of the polynomial is $\boxed{5}$,
The leading term is $\boxed{x^5}$,
The leading coefficient is $\boxed{1}$.

11. Simplify the expression $\left(\frac{10x^4y^3}{5x^6y^{-3}}\right)^4$

Solution:

$$\boxed{16x^{-8}y^{24}} \quad \text{or} \quad \boxed{\frac{16y^{24}}{x^8}}$$

10. Simplify the numerical expression

$$\left(\frac{10}{11}\right)^0.$$

Solution: $\boxed{1}$.

12. Simplify the expression $(3x^6y^3)(7x^{15}y^{11})$

Solution:

$$\boxed{21x^{21}y^{14}}$$

13. Simplify the expression $\frac{30x^{14}y^{17}z^{17}}{6x^9y^{12}z^{14}}$

Solution:

$$\boxed{5x^5y^5z^3}$$

14. Write in decimal notation

Solution:

$$5.4 \times 10^{-4} = \boxed{0.00054}$$

15. Write in scientific notation:

$$63400000$$

Solution:

$$\boxed{6.34 \times 10^7}$$

16. Write in scientific notation.

$$0.0039$$

Solution:

$$\boxed{3.9 \times 10^{-3}}$$

17. Multiply: $(6x - 6)(x^2 + 2x + 3)$

Circle the answer

Solution:

(a) $6x^3 + 18x^2 + 18x - 18$

(b) $6x^3 + 6x^2 + 6x - 18$

(c) $6x^3 + 6x^2 + 18x - 18$

(d) $6x^3 + 18x^2 + 6x - 18$

19. Multiply the polynomials: $(x - 1)(x + 3)$

Solution: $x^2 + 2x - 3$

18. Square the binomial: $(x - 5)^2$.

Solution: $x^2 - 10x + 25$

20. Divide and write in scientific notation:

$$\frac{1.2 \times 10^3}{4.8 \times 10^7}$$

Circle the answer

Solution:

(a) 0.25×10^{-4}

(b) 2.5×10^{-5}

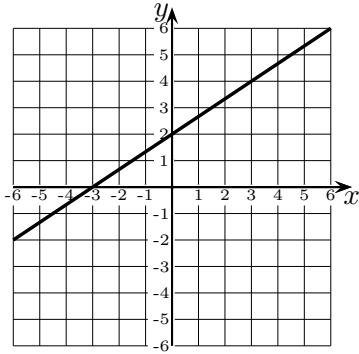
(c) 4×10^{-5}

(d) 4×10^{10}

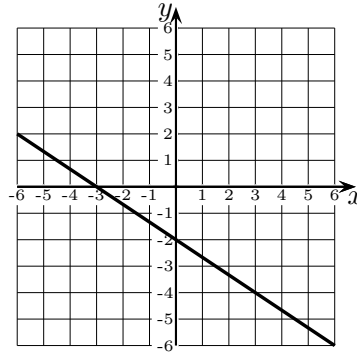
21. Which of the following is the graph of the equation $2x - 3y = -6$? (Circle the answer).

Solution:

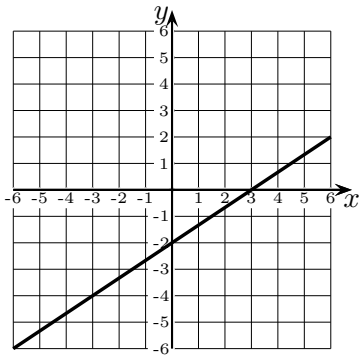
(a)



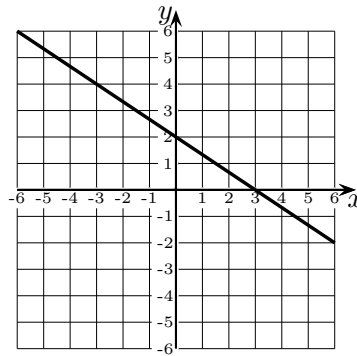
(c)



(b)



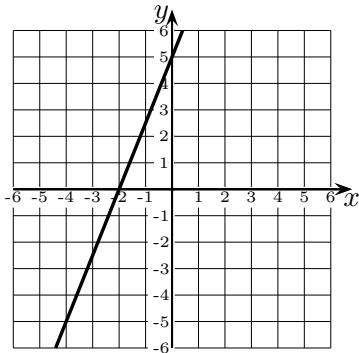
(d)



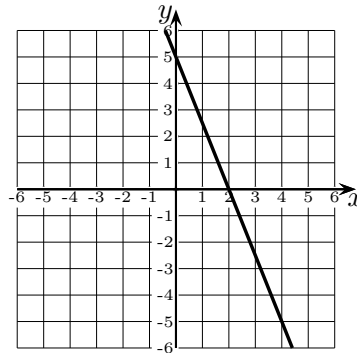
22. Which of the following is the graph of the equation $10x - 4y = 20$? (Circle the answer).

Solution:

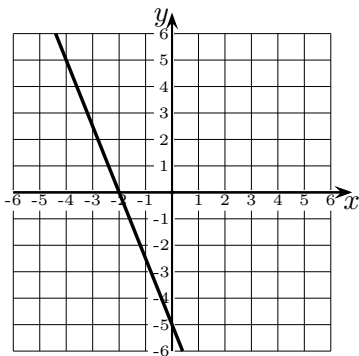
(a)



(c)



(b)



(d)

