

1. Solve the equation $4(m - 6) - 3m = 5(m - 9) - 3$.

- a) $m = \frac{159}{16}$
- b) $m = -\frac{3}{16}$
- c) $m = \frac{3}{2}$
- d) $m = 6$

2. Penelope invested \$30,000 in stocks and bonds. If her investment in bonds is \$3000 more than half her investment in stocks, how much did Penelope invest in bonds?

- a) \$27,000
- b) \$18,000
- c) \$12,000
- d) \$9,000

3. Find the solution set for the following inequality.

$$-1 \leq \frac{7 - 5x}{3} < 9$$

- a) $(-2, 4]$
- b) $(-4, 2]$
- c) $[-2, 4)$
- d) $[-4, 2)$

4. Solve the inequality:

$$4 + 2|x - 3| \leq 6.$$

- a) $[2, 4]$
- b) $(-\infty, -2] \cup [4, \infty)$
- c) $[-2, 2]$
- d) $(-\infty, -2] \cup [2, \infty)$

5. Solve the inequality:

$$-3|2x - 5| \leq 9$$

- a) $(1, 4)$
- b) $(-\infty, 1) \cup (4, \infty)$
- c) $(2, 3)$
- d) $(-\infty, \infty)$

6. Marta practiced for a kayak race on a local river. On one trip she traveled 10 miles upstream in 2 hours. If her speed in still water is 7.5 miles per hour, find the speed of the river current.

- a) 2.5 miles per hour
- b) 1.25 miles per hour
- c) 3.5 miles per hour
- d) 6.25 miles per hour

7. Which of the following relations is NOT a function?

- a) $\{(2, 3), (3, 4), (4, 5), (5, 6), (-2, 3), (-3, 4)\}$
- b) $\{(3, 2), (4, 3), (5, 4), (6, 5), (3, -2), (2, -3)\}$
- c) $\{(1, 0), (2, 1), (3, 2), (5, 3), (-1, 0), (-2, -1)\}$
- d) $\{(1, 1), (2, 2), (3, 3), (4, 4), (5, 5), (6, 6)\}$

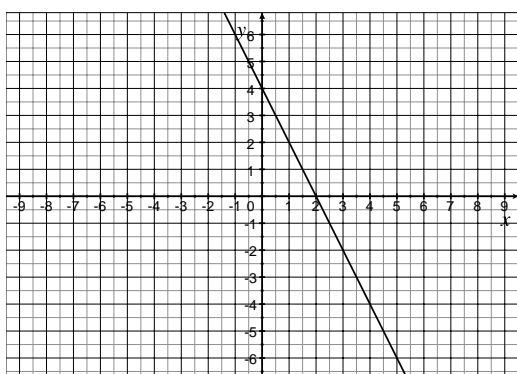
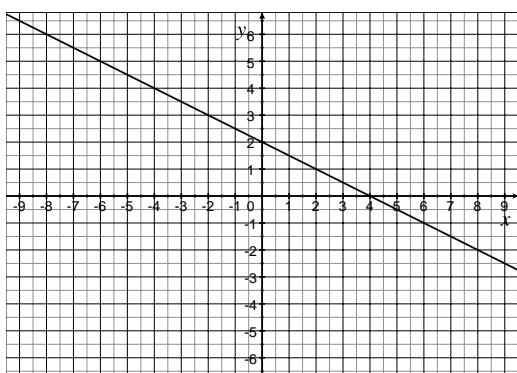
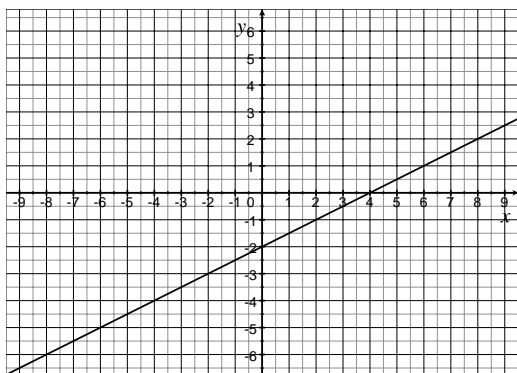
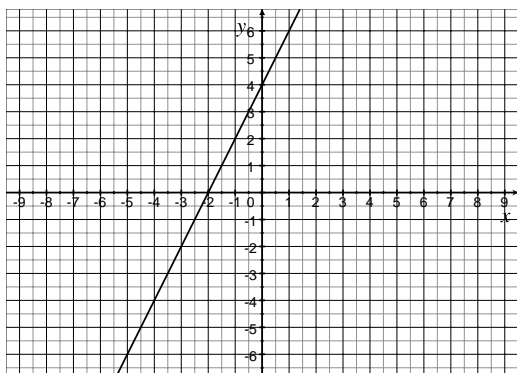
8. Given $f(x) = x^3 - x^2 + x + 1$, evaluate $f(2)$.

- a) 2
- b) 0
- c) 7
- d) 15

9. Which of the following points lies on the graph of the function $f(x) = 1 - |2 - 3x|$?

- a) $(3, 6)$
- b) $(-1, 4)$
- c) $(1, 1)$
- d) $\left(\frac{1}{3}, 0\right)$

10. Find the graph of the line $-2x + y = 4$.



11. Which of the following linear equations represents the line that is perpendicular to the line $2x - y = 1$ and passes through the point $(-1, 1)$?

- a) $y = -\frac{1}{2}x + \frac{1}{2}$
- b) $y = -\frac{1}{2}x - \frac{1}{2}$
- c) $y = \frac{1}{2}x + \frac{3}{2}$
- d) $y = \frac{1}{2}x - \frac{3}{2}$

12. Solve the system of linear equations

$$\begin{cases} \frac{1}{2}x - \frac{1}{7}y = -1 \\ 2x + \frac{6}{7}y = 1 \end{cases}$$

- a) $x = -2, y = 0$
- b) $x = 0, y = 7$
- c) $x = -7, y = -\frac{35}{2}$
- d) $x = -1, y = \frac{7}{2}$

13. Kristen wants to make 6 ounces of a 25% jasmine essential oil. She only has a 10% jasmine mixture and a 35% jasmine mixture available. How much of the 10% jasmine mixture should she combine with the 35% jasmine mixture to create the desired oil?

- a) 3.6 ounces
- b) 2.4 ounces
- c) 2 ounces
- d) 4 ounces

14. Simplify the following exponential expression.

$$\left(\frac{a^2b^{-1}(-c)^0}{a^3c^2}\right)^{-2}$$

- a) $-a^2b^2c^4$
- b) $\frac{b^2}{a^2c^4}$
- c) $a^2b^2c^4$
- d) $\frac{a^4c^4}{b^2}$

15. Find the leading coefficient and degree of the polynomial $-4 - 8x^3 - 2x^4 + 7x$
- a) Leading Coefficient -8 , Degree 3
 - b) Leading Coefficient 7, Degree 1
 - c) Leading Coefficient -2 , Degree 4
 - d) Leading Coefficient 7, Degree 3
16. Given the functions $f(x) = 8 + x^2 + x^3 - x^4$ and $g(x) = 1 - x + x^3 - x^4$, evaluate $(f - g)(-1)$.
- a) 7
 - b) 11
 - c) 15
 - d) 9
17. Multiply $(-2x + 3)(3x - 5)$.
- a) $6x^2 - 9x - 15$
 - b) $-6x^2 + 9x - 15$
 - c) $-6x^2 + 19x - 15$
 - d) $-6x^2 - x - 15$
18. Multiply $(2x - 1)(2x + 1)^2$.
- a) $4x^3 + 2x^2 - 2x - 1$
 - b) $8x^3 + 4x^2 - 2x - 1$
 - c) $8x^3 - 4x^2 - 2x + 1$
 - d) $4x^3 - 3x - 1$
19. Which of the following is the remainder when $x^3 + 3x^2 - 2x + 1$ is divided by $x^2 + 1$?
- a) $3x$
 - b) $-6x + 1$
 - c) $x + 3$
 - d) $-3x - 2$
20. Find the quotient and remainder when $P(x) = 3x^3 - 7x + 6$ is divided by $Q(x) = x + 2$.
- a) Quotient: $3x^2 - 6x + 5$; Remainder: -4
 - b) Quotient: $3x^2 + 6x + 5$; Remainder: 16
 - c) Quotient: $3x - 13$; Remainder: 32
 - d) Quotient: $3x - 1$; Remainder: 4
1. D
2. C
3. B
4. A
5. D
6. A
7. B
8. C
9. D
10. A
11. A
12. D
13. B
14. C
15. C
16. A
17. C
18. B
19. D
20. A