

Section 6.1: An Introduction to Factoring Polynomials

1. What is x if $(x - 14) = 0$?
 - (a) $x = 14$
 - (b) $x = -14$
 - (c) $x = 0$
 - (d) None of the above

2. What is x if $(2x + 5) = 0$?
 - (a) $x = 5$
 - (b) $x = -5$
 - (c) $x = \frac{5}{2}$
 - (d) $x = -\frac{5}{2}$

3. If $x = c$ is a zero, then the corresponding factor is:
 - (a) $(x - c)$
 - (b) $(x + c)$
 - (c) $x = c$
 - (d) $xc = 0$

4. If $x = -c$ is a zero, then the corresponding factor is:
 - (a) $(x - c)$
 - (b) $(x + c)$
 - (c) $x = c$
 - (d) $xc = 0$

5. If $x = 8$ is a zero, then the corresponding factor is:

- (a) $(x - 8)$
- (b) $(x - 8)^2$
- (c) $(x + 8)$
- (d) $(x + 8)^2$

6. If $x = 0$ is a zero, then the corresponding factor is:

- (a) $(x - 0)$
- (b) x
- (c) $(x + 0)$
- (d) All of the above

7. If $x = -\frac{5}{10}$ is a zero, then the corresponding factor is:

- (a) $(x - \frac{5}{10})$
- (b) $(x - 2)$
- (c) $(2x + 1)$
- (d) $(x - \frac{1}{2})$
- (e) None of the above

8. If $x = -\frac{3}{2}$ is a zero, then the corresponding factor is:

- (a) $(x - \frac{3}{2})$
- (b) $(2x + 3)$
- (c) $(3x + 2)$
- (d) $(2x - 3)$
- (e) None of the above

9. Determine the zeros of $f(x) = (2x - 5)(x + 3)$.

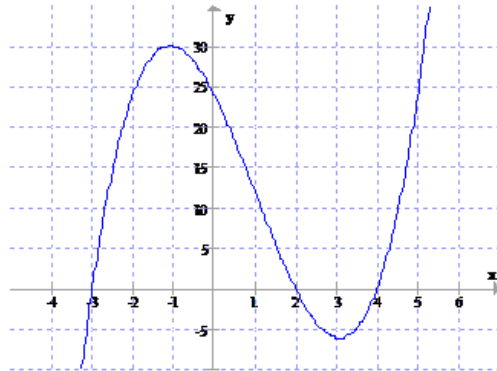
- (a) $x = 5, 3$
- (b) $x = 5, -3$
- (c) $x = \frac{5}{2}, -3$
- (d) $x = -2, 5, -3$
- (e) None of the above

10. Determine the zeros of $f(x) = x(x + 8)$.
- (a) $x = 0, -8$
 - (b) $x = -8$
 - (c) $x = 8$
 - (d) $x = \pm 8$
 - (e) None of the above
11. $f(x)$ has zeros $x = 3, -5$. What are the factors?
- (a) $(3x)(-5x)$
 - (b) $(x + 3)(x - 5)$
 - (c) $(x - 3)(x + 5)$
 - (d) $(-3x + 5)$
12. $f(x)$ has zeros $x = \frac{5}{7}, -1$. What are the factors?
- (a) $(x + 1)(5x - 7)$
 - (b) $(x - 1)(5x + 7)$
 - (c) $(x + 1)(7x - 5)$
 - (d) $(x - 1)(7x + 5)$
13. True or False: If a value is an x -intercept then it is a root of the polynomial equation.
- (a) True, and I am very confident
 - (b) True, but I am not very confident
 - (c) False, but I am not very confident
 - (d) False, and I am very confident
14. True or False: The expression $2ax - 7z - 3bx + 7b$ should be grouped as $(2ax - 7a) - (2bx + 7b)$ in preparation for factoring by grouping.
- (a) True, and I am very confident
 - (b) True, but I am not very confident
 - (c) False, but I am not very confident
 - (d) False, and I am very confident

15. When we talk about “the zeros of a function” we mean:

- (a) The input value(s) for which the output value is zero.
- (b) x -intercepts and y -intercepts
- (c) The output value(s) for which the input value is zero.
- (d) The pieces of a function that have a slope of zero.

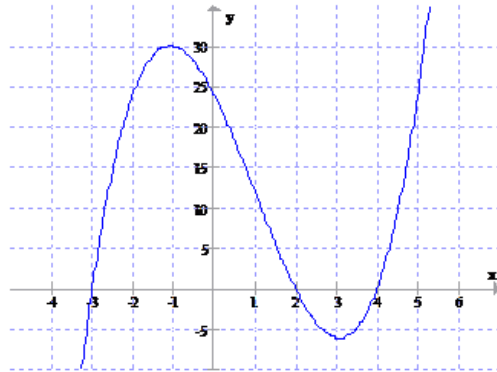
16. The graph and table of values for $y = x^3 - 3x^2 - 10x + 24$ are given below. What are the coordinates of the intercepts of the function?



x	y
-3	0
-2	24
-1	30
0	24
1	12
2	0
3	-6
4	0

- (a) $-3, 24, 2, 4$
- (b) $(-3, 0), (0, 24), (2, 0), (4, 0)$
- (c) $(-3, 0), (2, 0), (4, 0)$
- (d) $(0, 24)$

17. The graph and table of values for $y = x^3 - 3x^2 - 10x + 24$ are given below. What are the zeros of the function?



x	y
-3	0
-2	24
-1	30
0	24
1	12
2	0
3	-6
4	0

- (a) $-3, 24, 2, 4$

- (b) $-3, 2, 4$
- (c) 24
- (d) $(0, 0)$

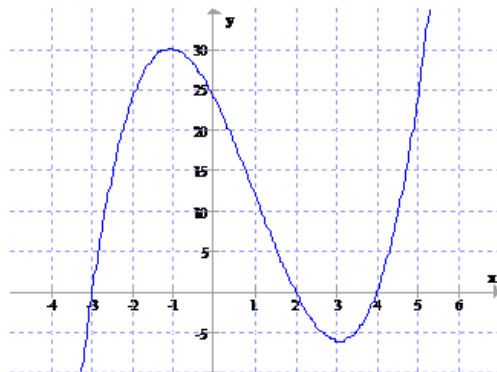
18. The graph and table of values for $y = x^3 - 3x^2 - 10x + 24$ are given below. What is a correct factorization of the function?



x	y
-3	0
-2	24
-1	30
0	24
1	12
2	0
3	-6
4	0

- (a) $y = x - 3, x - 24, x - 2, x - 4$
- (b) $x + 3, x - 2, x - 4$
- (c) $y = (x - (-3))(x - 2)(x - 4)$
- (d) $(x + 3)(x - 24)(x - 2)(x - 4)$

19. The graph and table of values for $y = x^3 - 3x^2 - 10x + 24$ are given below. What are the factors of the function?



x	y
-3	0
-2	24
-1	30
0	24
1	12
2	0
3	-6
4	0

- (a) $y = x - 3, x - 24, x - 2, x - 4$
- (b) $x + 3, x - 2, x - 4$
- (c) $y = (x - (-3))(x - 2)(x - 4)$
- (d) $(x + 3)(x - 24)(x - 2)(x - 4)$

20. What is the prime factorization of 140?

- (a) $(2)(70)$
- (b) $(4)(5)(7)$
- (c) $(2)(5)(7)$
- (d) $(2)(2)(5)(7)$

21. What is the greatest common factor of the terms of $20x^2 + 28x$?

- (a) $2x$
- (b) $4x^2$
- (c) $4x$
- (d) $7x$
- (e) 1

22. What is the greatest common factor of the terms of $21a^3b - 15a^2b^2$?

- (a) $3a^2b$
- (b) $105a^3b^2$
- (c) $3a^3b^2$
- (d) 1

23. Factor out the greatest common factor: $16x^3y^2 - 24x^4y + 32x^2y$

- (a) $4xy(4x^2y - 6x^3 + 8x)$
- (b) $8x^2y(2xy - 3x^2 + 4)$
- (c) $16x^3y^2(1 - 2x + 2y)$
- (d) $8xy^2(2x - 3x^2 + 4y)$

24. Factor -1 out of $20 - x^2$

- (a) $-1(20 - x^2)$
- (b) $-1(x^2 - 20)$
- (c) $-1(20 + x^2)$
- (d) $-1(-x^2 + 20)$

25. What is the complete factorization of $21x^2 - 18x$?

(a) $(3x + 2x)(7x - 2)$

(b) $x(21x - 18)$

(c) $3x(21x^2 - 18x)$

(d) $3x(7x - 6)$

(e) This expression is already completely factored.

26. What is the complete factorization of $4x(2x - 1) - 3(2x - 1)$?

(a) $4x - 3(2x - 1)$

(b) $(4x - 3)(2x - 1)$

(c) $8x^2 - 10x + 3$

(d) This expression is already completely factored.