

## 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  $f(x) = (2x - 5)(x + 3)$ .

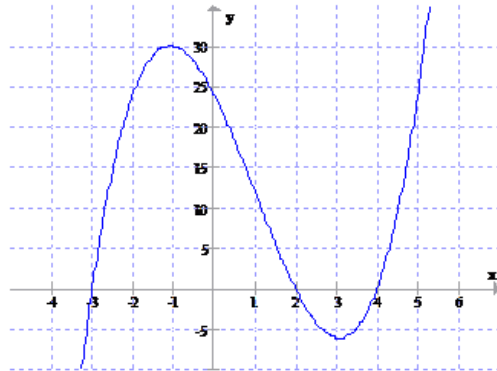
- (a)  $x = 5, 3$
- (b)  $x = 5, -3$
- (c)  $x = \frac{5}{2}, -3$
- (d)  $x = -2, 5, -3$
- (e) None of the above

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.

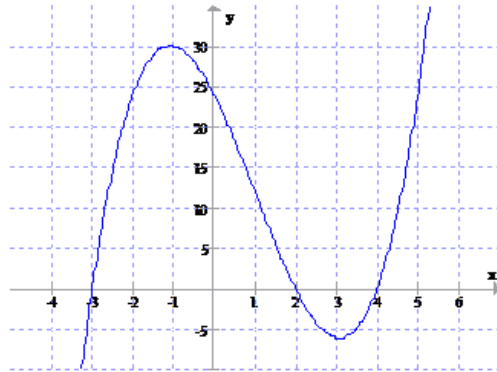
16. The graph and table of values for  $y = x^3 - 3x^2 - 10x + 24$  are given below. What are the coordinates of the intercepts of the function?



$x$	$y$
-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?

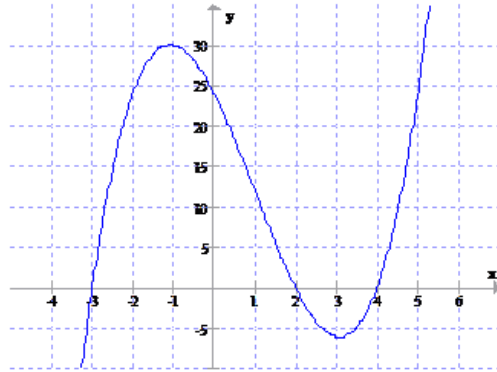


$x$	$y$
-3	0
-2	24
-1	30
0	24
1	12
2	0
3	-6
4	0

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

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

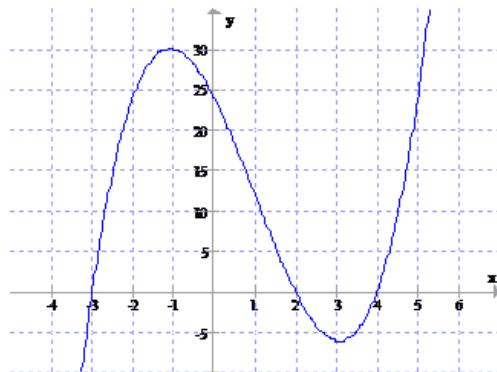
18. The graph and table of values for  $y = x^3 - 3x^2 - 10x + 24$  are given below. What is a correct factorization of the function?



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.