Factorizing Quadratic Expression.

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A quadratic expression will always be in the form

$ax^2 + bx + c = 0$, where $a, b, c \in \mathbb{Z}$ - { positive + negative whole numbers }

Factorize $x^2 + 7x + 10$ ($ax^2 + bx + c$)

$a = 1$ coefficient of x^2

$b = 7$ coefficient of x

$c = 10$ constant

$(x + 5)(x + 2)$ — multiply

multiply

x^2 $+10$

x x $\quad$ 5 2

$+2x$

$+5x$

$+7x$

C/W

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Q2 →

Q2 Factorize $x^2 + 5x + 6$

$(x + 2)(x + 3)$ — multiply

multiply

x^2 $+6$

x x $\quad$ 2 3

$+3x$

$+2x$

$+5x$

Eg3) $x^2 + 20x + 36$

$(x + 18)(x + 2)$ — multiply

x^2 $+36$

x x $\quad$ 18 2

$+2x$

$+18x$

$+20x$

T&T2 2.4 Factorisiin...

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Section 2.4 Factorising quadratic expressions

Example 1

Factorise $3x^2 + 10x + 8$.

Example 2

Find the factors of $2x^2 - 11x + 12$.

Example 3

Factorise (i) $8x^2 + 10x - 3$ (ii) $7x^2 - 19xy - 6y^2$

Exercise 2.4

Factorise each of the following:

1. $x^2 + 5x + 6$ **2.** $x^2 + 8x + 12$ **3.** $x^2 + 9x + 14$

Factorise each of the following:

4. $x^2 + 11x + 24$ **5.** $x^2 + 12x + 20$ **6.** $x^2 + 12x + 27$

Factorise each of the following:

7. $x^2 + 11x + 30$

8. $x^2 + 15x + 44$

9. $x^2 + 20x + 36$

Factorise each of the following:

10. $2x^2 + 5x + 2$

11. $2x^2 + 11x + 14$

12. $5x^2 + 21x + 4$

Factorise each of the following:

13. $x^2 - 7x + 12$ **14.** $x^2 - 9x + 18$ **15.** $x^2 - 9x + 20$

Factorise each of the following:

16. $x^2 - 14x + 24$ **17.** $x^2 - 12x + 27$ **18.** $x^2 - 13x + 36$

Factorise each of the following:

19. $2x^2 - 7x + 3$ **20.** $3x^2 - 17x + 10$ **21.** $5x^2 - 17x + 6$

Factorise each of the following:

22. $3x^2 - 17x + 20$ **23.** $5x^2 + 27x - 18$ **24.** $3x^2 - 14x + 15$

Factorise each of the following:

25. $x^2 - 4x - 12$ **26.** $x^2 - 3x - 10$ **27.** $x^2 + 7x - 18$

Factorise each of the following:

28. $x^2 + 7x - 30$ **29.** $x^2 - 13x - 30$ **30.** $x^2 - 18x - 40$

Factorise each of the following:

31. $2x^2 - 7x - 15$

32. $3x^2 + 11x - 20$

33. $5x^2 - 12x - 9$

Factorise each of the following:

34. $x^2 - 6x - 72$

35. $8x^2 + 10x - 3$

36. $2x^2 - 19x + 9$

Factorise each of the following:

37. $12x^2 - 11x - 5$

38. $6x^2 + x - 15$

39. $8x^2 - 14x + 3$

Factorise each of the following:

40. $3x^2 + 13x - 10$

41. $9x^2 + 24x + 16$

42. $5x^2 - 31x + 6$

Factorise each of the following:

43. $3x^2 - x - 14$ **44.** $6x^2 - 11x + 3$ **45.** $12x^2 - 23x + 10$

Factorise each of the following:

46. $9x^2 + 25x - 6$ **47.** $6x^2 + x - 22$ **48.** $9x^2 - x - 10$

Factorise each of the following:

49. $4x^2 - 11x + 6$

50. $10x^2 - 17x - 20$

51. $36x^2 - 7x - 4$

Factorise each of the following:

52. $12x^2 - 17x + 6$

53. $15x^2 - 14x - 8$

54. $24x^2 + 2x - 15$

Answers

Exercise 2.4

1. $(x + 2)(x + 3)$
2. $(x + 2)(x + 6)$
3. $(x + 7)(x + 2)$
4. $(x + 3)(x + 8)$
5. $(x + 2)(x + 10)$
6. $(x + 3)(x + 9)$
7. $(x + 5)(x + 6)$
8. $(x + 4)(x + 11)$
9. $(x + 2)(x + 18)$
10. $(2x + 1)(x + 2)$
11. $(2x + 7)(x + 2)$
12. $(5x + 1)(x + 4)$
13. $(x - 3)(x - 4)$
14. $(x - 3)(x - 6)$
15. $(x - 4)(x - 5)$
16. $(x - 2)(x - 12)$
17. $(x - 3)(x - 9)$
18. $(x - 4)(x - 9)$
19. $(2x - 1)(x - 3)$
20. $(3x - 2)(x - 5)$
21. $(5x - 2)(x - 3)$
22. $(3x - 5)(x - 4)$
23. $(?x - ?)(? - ?)$
24. $(3x - 5)(x - 3)$
25. $(x + 2)(x - 6)$
26. $(x + 2)(x - 5)$
27. $(x - 2)(x + 9)$
28. $(x - 3)(x + 10)$
29. $(x + 2)(x - 15)$
30. $(x + 2)(x - 20)$

Answers

31. $(2x + 3)(x - 5)$
32. $(3x - 4)(x + 5)$
33. $(5x + 3)(x - 3)$
34. $(x + 6)(x - 12)$
35. $(4x - 1)(2x + 3)$
36. $(2x - 1)(x - 9)$
37. $(4x - 5)(3x + 1)$
38. $(3x + 5)(2x - 3)$
39. $(4x - 1)(2x - 3)$
40. $(3x - 2)(x + 5)$
41. $(3x + 4)(3x + 4)$
42. $(5x - 1)(x - 6)$
43. $(3x - 7)(x + 2)$
44. $(3x - 1)(2x - 3)$
45. $(4x - 5)(3x - 2)$
46. $(9x - 2)(x + 3)$
47. $(6x - 11)(x + 2)$
48. $(9x - 10)(x + 1)$
49. $(4x - 3)(x - 2)$
50. $(5x + 4)(2x - 5)$
51. $(9x - 4)(4x + 1)$
52. $(4x - 3)(3x - 2)$
53. $(3x - 4)(5x + 2)$
54. $(6x + 5)(4x - 3)$