



MATHS

BOOKS - JNAN PUBLICATION

ALGEBRAIC FORMULA

Example

1. To find the square of the algebraic expressions given below using $(a + b)^2 = a^2 + 2ab + b^2$, Let's find what has to be substituted for a and b in each case and hence find their square.

x + 3

2. To find the square of the algebraic expressions given below using $(a + b)^2 = a^2 + 2ab + b^2$, Let's find what has to be substituted for a and b in each case and hence find their square.

p + 9

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3. To find the square of the algebraic expressions given below using $(a + b)^2 = a^2 + 2ab + b^2$, Let's find what has to be substituted for a and b in each case and hence find their square.

6 - x

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4. To find the square of the algebraic expressions given below using $(a + b)^2 = a^2 + 2ab + b^2$, Let's find what has to be substituted for a and b in each case and hence find their square.

5. To find the square of the algebraic expressions given below using $(a + b)^2 = a^2 + 2ab + b^2$, Let's find what has to be substituted for a and b in each case and hence find their square.

mn + 1

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6. To find the square of the algebraic expressions given below using $(a + b)^2 = a^2 + 2ab + b^2$, Let's find what has to be substituted for a and b in each case and hence find their square.

6x + 3

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7. To find the square of the algebraic expressions given below using $(a+b)^2=a^2+2ab+b^2$, Let's find what has to be substituted for a and

b in each case and hence find their square.

4x + 5y



8. To find the square of the algebraic expressions given below using $(a + b)^2 = a^2 + 2ab + b^2$, Let's find what has to be substituted for a and b in each case and hence find their square.

pqc + 2

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9. To find the square of the algebraic expressions given below using $(a + b)^2 = a^2 + 2ab + b^2$, Let's find what has to be substituted for a and b in each case and hence find their square.

 $rac{5}{k} + 3$

10. To find the square of the algebraic expressions given below using $(a + b)^2 = a^2 + 2ab + b^2$, Let's find what has to be substituted for a and b in each case and hence find their square.

 $rac{3}{r}+rac{2}{p}$

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11. To find the square of the algebraic expressions given below using $(a + b)^2 = a^2 + 2ab + b^2$, Let's find what has to be substituted for a and b in each case and hence find their square.

 $rac{p}{q}+rac{m}{n}$

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12. To find the square of the algebraic expressions given below using $(a + b)^2 = a^2 + 2ab + b^2$, Let's find what has to be substituted for a and b in each case and hence find their square.

3xy + 4z

13. To find the square of the algebraic expressions given below using $(a + b)^2 = a^2 + 2ab + b^2$, Let's find what has to be substituted for a and b in each case and hence find their square.

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14. To find the square of the algebraic expressions given below using $(a + b)^2 = a^2 + 2ab + b^2$, Let's find what has to be substituted for a and b in each case and hence find their square.

2x + 3y + z

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15. To find the square of the algebraic expressions given below using $(a+b)^2 = a^2 + 2ab + b^2$, Let's find what has to be substituted for a and

b in each case and hence find their square.

p + q + r + s



16. To find the square of the algebric expressions given below using $(a - b)^2 = a^2 - 2ab + b^2$, what has to be substitued for a and b in each cases and hence let's find the squares.

x - 5

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17. To find the square of the algebric expressions given below using $(a - b)^2 = a^2 - 2ab + b^2$, what has to be substitued for a and b in each cases and hence let's find the squares.

m - n

18. To find the square of the algebric expressions given below using $(a - b)^2 = a^2 - 2ab + b^2$, what has to be substitued for a and b in each cases and hence let's find the squares.

10 - x

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19. To find the square of the algebric expressions given below using $(a - b)^2 = a^2 - 2ab + b^2$, what has to be susbtitued for a and b in each cases and hence let's find the squares.

x + y

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20. To find the square of the algebric expressions given below using $(a - b)^2 = a^2 - 2ab + b^2$, what has to be substitued for a and b in each cases and hence let's find the squares.

3x - y

21. To find the square of the algebric expressions given below using $(a - b)^2 = a^2 - 2ab + b^2$, what has to be substitued for a and b in each cases and hence let's find the squares.

4m + 2

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22. To find the square of the algebric expressions given below using $(a - b)^2 = a^2 - 2ab + b^2$, what has to be substitued for a and b in each cases and hence let's find the squares.

5y + x

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23. To find the square of the algebric expressions given below using $(a-b)^2 = a^2 - 2ab + b^2$, what has to be substitued for a and b in each

cases and hence let's find the squares.

ce-fg



24. To find the square of the algebric expressions given below using $(a - b)^2 = a^2 - 2ab + b^2$, what has to be substitued for a and b in each cases and hence let's find the squares.

$$px-rac{1}{2}$$

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25. To find the square of the algebric expressions given below using $(a - b)^2 = a^2 - 2ab + b^2$, what has to be substitued for a and b in each cases and hence let's find the squares.

p + q - r

26. To find the square of the algebric expressions given below using $(a - b)^2 = a^2 - 2ab + b^2$, what has to be substitued for a and b in each cases and hence let's find the squares.

p - q +r

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27. To find the square of the algebric expressions given below using $(a - b)^2 = a^2 - 2ab + b^2$, what has to be substitued for a and b in each

cases and hence let's find the squares.

$$\frac{2x}{3} - \frac{3y}{4}$$

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28. To find the square of the algebric expressions given below using $(a - b)^2 = a^2 - 2ab + b^2$, what has to be substitued for a and b in each cases and hence let's find the squares.

 $3m^2-4n^3$

29. To find the square of the algebric expressions given below using $(a - b)^2 = a^2 - 2ab + b^2$, what has to be substitued for a and b in each cases and hence let's find the squares.

2x + y - 4

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30. To find the square of the algebric expressions given below using $(a - b)^2 = a^2 - 2ab + b^2$, what has to be susbtitued for a and b in each cases and hence let's find the squares.

999

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31. To find the square of the algebric expressions given below using $\left(a-b
ight)^2=a^2-2ab+b^2$, what has to be subbitued for a and b in each



p + q - r - sWatch Video Solution
32. Write true or false: The product of $(a + b) \times (a + b)$ is $a^2 + b^2$ Watch Video Solution

33. Write true or false: The product of (a+b) imes (a+b)

$$is(a+b)^2$$

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34. Write true or false: product of (a+b) imes (a+b)

is equas to 2(a+b)

35. Write true or false: the product of (a + b) imes (a + b)

is 4ab



36. Let's find, which of the following will be value of k satisfying the identify $(x + 7)^2 = x^2 + 14x + k$

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37. Which on of the following algebric expression must be added $a^2 + b^2$

so that the sum is a perfect square.

1) 4ab 2)2ab 3)2(a^2+b^2) 4)ab

38. Which on of the following algebraic expression must be added $a^2 + b^2$ so that the sum is a perfect square.

- 1) -4ab
- 2) -2ab
- 3) $2ig(a^2+b^2ig)$
- 4) -ab



39. Which on of the following algebric expression must be added $a^2 + b^2$

so that the sum is a perfect square.

2ab or -2ab



40. Which on of the following algebraic expression must be added a^2+b^2 so that the sum is a perfect square.

2) 2*ab*

3) 4ab

4) – 1

41. If $(a + b)^2 = a^2 + 6a + 9$. Let's find,the possible value of b.

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42. If $(a + b)^2 = a^2 + 6a + 9$. Let's find, which of the following is the

posible value of b.

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43. If $(a + b)^2 = a^2 + 6a + 9$. Let's find, which of the following is the posible value of b.

44. If $(a + b)^2 = a^2 + 6a + 9$. Let's find, which of the following is the posible value of b.



47. Write true or false:

$$rac{1}{8}$$
 when added to $x^2+rac{1}{4}x$ make it a perfect square.

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48. Let's find, for which value of k, will the expression $c^2 + kc\frac{1}{2} + \frac{1}{4}$ be a perfect square.

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49. Let's find what number must be added or subtracted from
$$9p^2 + rac{1}{9p^2}$$

to make it a perfect square.



50. If
$$\left(x-y
ight)^2=4-4y+y^2$$
, then let's find the value of x.

51. If
$$\left(c-3
ight)^2=c^2+kc+9$$
, Let's find the value of k

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52. Let's simplify using formula.

$$\left(2q-3z
ight)^{2}-2(2q-3z)(q-3z)+\left(q-3z
ight)^{2}$$

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53. Let's simplify using formula.

$$\left(3p+2q-4r
ight)^{2} + 2(3p+2q-4r)(4r-2p-q) + \left(4r-2p-q
ight)^{2}$$

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54. Let's express the following as perfect square.

 $16a^2 - 40ac + 25c^2$



55. Let's express the following as perfect square.

$$4p^2-2p+rac{1}{4}$$

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56. Let's express the following as perfect square.

$$1+\frac{4}{a}+\frac{4}{a^2}$$

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57. Let's express the following as perfect square.

$$9a^2 + 24ab + 16b^2$$

58. Let's express the following square and hence find the value.

 $64a^2 + 16a + 1$ when a = 1

59. Let's express the following in perfect square and hence find the value.

 $25a^2 - 30ab + 9b^2$ when a = 1, b = 1

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60. Let's express the following in perfect square and hence find the value.

$$64-rac{16}{p}+rac{1}{p^2}$$
 , when $p=-1$

61. Let's express the following in perfect square and hence find the value.

$$p^2q^2+10pqr+25r^2$$
 when $p=2,\,q=-1,\,r=3$.

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Let's

apply,

 $(a+b)^2+(a-b)^2=2ig(a^2+b^2ig) \,\, {
m or} \,\, (a+b)^2-(a-b)^2=4ab \,\, {
m or} \,\, ab=ig(a+b^2)$

to find the following.

Let's find st and $\left(s^2+t^2
ight)$ when s+t=12&s-t=8

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63.
$$(a+b)^2 + (a-b)^2 = 2(a^2 + b^2)$$
 or $(a+b)^2 - (a-b)^2 = 4ab$ or $ab = \left(\frac{a+b}{2}\right)^2 - \left(\frac{a-b}{2}\right)^2$ to find the following.
Let's find $8xy(x^2 + y^2)$ when $(x+y) = 5$ and $(x-y) = 1$

Let's

apply,

$$(a+b)^{2} + (a-b)^{2} = 2(a^{2}+b^{2})$$
 or $(a+b)^{2} - (a-b)^{2} = 4ab$ or
 $ab = \left(\frac{a+b}{2}\right)^{2} - \left(\frac{a-b}{2}\right)^{2}$ to find the following.
Let's find $\frac{x^{2} + y^{2}}{2xy}$ when (x + y) = 9 and (x - y) = 5`

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65.

apply,

$${(a+b)}^2+{(a-b)}^2=2{\left(a^2+b^2
ight)} \,\, {
m or} \,\, {(a+b)}^2-{\left(a-b
ight)}^2=4ab \,\, {
m or} \,\, ab=$$

to find the following.

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Let's express 36 as the difference of two squares.

66. Let's apply,
$$\left(a+b
ight)^{2}+\left(a-b
ight)^{2}=2\left(a^{2}+b^{2}
ight) ext{ or } \left(a+b
ight)^{2}-\left(a-b
ight)^{2}=4ab$$
 or

64.

$$ab=\left(rac{a+b}{2}
ight)^2-\left(rac{a-b}{2}
ight)^2$$
 to find the following.

Let's express 44 as the difference of two squres.

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67. Let's apply,
$$(a + b)^2 + (a - b)^2 = 2(a^2 + b^2)$$
 or
 $(a + b)^2 - (a - b)^2 = 4ab$ or $ab = \left(\frac{a + b}{2}\right)^2 - \left(\frac{a - b}{2}\right)^2$ to find

the following.

60

Let's express $8x^2 + 50y^2$ as the sum of two squares.

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68. Let's apply,
$$(a+b)^2 + (a-b)^2 = 2(a^2+b^2)$$
 or $(a+b)^2 - (a-b)^2 = 4ab$ or $ab = \left(\frac{a+b}{2}\right)^2 - \left(\frac{a-b}{2}\right)^2$

Lot'c

to find the following Let's express x as the difference of two squares.

69. Using the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$, let's find

the product of the following algebraic expression.

(x+7)(x+1)

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70. Using the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$, let's find

the product of the following algebraic expression.

(X-8) (x-2)

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71. Using the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$, let's find

the product of the following algebraic expression.

(x+9)(x-6)

72. Using the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$, let's find

the product of the following algebraic expression.

(2x +1)(2x-1)

73. Using the identity $(x+a)(x+b) = x^2 + (a+b)x + ab$, let's find

the product of the following algebraic expression.

(xy-4)(xy + 2)

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74. Using the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$, let's find

the product of the following algebraic expression.

$$\left(a^2+5\right)\left(a^2-4\right)$$

75. Using formula let's show that.

$$(2x+3y)^2-(2x-3y)^2=24xy$$

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76. Using formula let's show that.

$$(a+2b)^2+(a-2b)^2=2ig(a^2+4b^2ig)$$

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77. Using formula let's show that.

$$(l+m)^2 = (l-m)^2 + 4lm$$

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78. Using formula let's show that.

$$\left(2p - q
ight)^2 = \left(2p + q
ight)^2 - 8pq$$



79. Using formula let's show that.

$$\left(3m + 4n
ight)^2 = \left(3m - 4n
ight)^2 + 48mn$$

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80. Using formula let's show that.

$$\left(6x+7y
ight)^2-84xy=36x^2+49y^2$$

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81. Using formula let's show that.

$$\left(3a-4b
ight)^2+24ab=9a^2+16b^2$$

82. Using formula let's show that.

$$\left(2a+\frac{1}{a}\right)^2 = \left(2a-\frac{1}{a}\right)^2 + 8$$

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83. Using formula, let's solve each of the following problems-

Let's find the value of x^2+y^2

when xy = 16. and x - y = 4

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84. Using formula, let's solve each of the following problems-

Let's find the value of $a^2 + b^2 when, ab = 24, a - b = 2$

85. Using formula, let's solve each of the following problems-

Let's find the value of
$$a^2+rac{1}{a^2}$$
 When $a-rac{1}{a}=4$

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86. Using formula, let's solve each of the following problems-

Let's find the value of When $l^2+m^2, l+m=5, lm=6$

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87. Using formula, let's solve each of the following problems-

Let's find the value of
$$a^2+rac{1}{a^2}when, a+rac{1}{a}=4$$

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88. Using formula, let's solve each of the following problems-

If
$$5x+rac{1}{x}=6$$
, Let's show $25x^2+rac{1}{x^2}=26$

89. Using formula, let's solve each of the following problems-

If
$$2x+rac{1}{x}=5$$
, Let's find the value of $4x^2+rac{1}{x^2}$

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90. Using formula, let's solve each of the following problems-

If
$$rac{x}{y}+rac{y}{x}=$$
 3, Let's find the value of $rac{x^2}{y^2}+rac{y^2}{x^2}$

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91. Using formula, let's solve each of the following problems-

If
$$m+rac{1}{m}=\ -p$$
, Let's show that $m^2+rac{1}{m^2}=p^2-2$

92. Using formula, let's solve each of the following problems-

If
$$a^2+b^2=5ab$$
, let's show that $\displaystyle rac{a^2}{b^2}+\displaystyle rac{b^2}{a^2}=23$

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93. Using formula, let's solve each of the following problems-

If
$$6x^2-1=4x$$
, let's show $\left(36x^2+rac{1}{x^2}
ight)=28$

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94. Using formula, let's solve each of the following problems-

If
$$m-rac{1}{m}=p-2$$
, then lets show $m^2+rac{1}{m^2}=p^2-4p+6$

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95. Using formula, let's solve each of the following problems-

If
$$(m-2)-rac{1}{m-2}=6$$
, then, find the value of $\left(m-2
ight)^2+rac{1}{\left(m-2
ight)^2}$

96. Using the formula $a^2 - b^2 = (a + b)(a - b)$. Let's find the values

 $(37)^2 - (13)^2$

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97. Using the formula $a^2 - b^2 = (a+b)(a-b)$. Let's find the values $(2.06)^2 - (0.94)^2$

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98. Using the formula $a^2 - b^2 = (a + b)(a - b)$. Let's find the values

 $(82)^2 - (78)^2$

99. Using the formula $a^2 - b^2 = (a+b)(a-b)$. Let's find the values $(1.15)^2 - (0.85)^2$

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100. Using the formula $a^2 - b^2 = (a + b)(a - b)$. Let's find the values $(65)^2 - (35)^2$

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101. If $k-p^2=(9+p)(9-p)$ lets find the value of k

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102. If $\left(25-4x^2
ight)=(5+ax)(5-ax)$ let's find the positive value of a

103. Fill in the box, so that the identity $(4-x) imes ?= \left(16-x^2
ight)$ is

satisfied.



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105. Let's express the following in the product from using formula.

 $49x^4 - 36x^4$



106. Let's express the following in the product from using formula.

$$\left(2a+b
ight)^2-\left(a+b
ight)^2$$



107. Let's express the following in the product from using formula.

$$\left(x+y\right)^2-\left(a+b\right)^2$$

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108. Let's express the following in the product from using formula.

$$\left(x+y-z
ight)^2-\left(x-y+z
ight)^2$$

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109. Let's express the following in the product from using formula.

$$\left(m+p+q
ight)^2-\left(m-p-q
ight)^2$$

110. Using formula, lets find the continued, product of the followingl

$$(c+d)(c-d)ig(c^2+d^2ig)$$

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111. Let's express the following in the product from using formula.

$$\left(1-3x^2
ight) \left(1+3x^2
ight) \left(1+9x^4
ight)$$

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112. Let's express the following in the product from using formula.

$$\left(a^2+b^2
ight)\left(a^2-b^2
ight)\left(a^4+b^4
ight)\left(a^8+b^8
ight)$$

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113. Let's express the following in the product form:

 $16c^4-81d^4$



114. Let's express the following in the product form:

$$p^4q^4 - r^4s^4$$

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115. Let's express the following in the product form:

 $81 - x^4$

116. Let's express the following in the product form:

 $625 - a^4 b^4$

117. Let's prove
$$(p+q)^4 - (p-q)^4 = 8pq ig(p^2 + q^2 ig)$$



121. If
$$x = a + rac{1}{a}$$
 and $y = a - rac{1}{a}$ then find the value of $x^4 + y^4 - 2x^2y^2$

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122. Let's express
$$\left(4x^2+4x+1-a^2+8a-16
ight)$$
 as the difference of

two squares, using formula.

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123. Let's express
$$a^2+rac{1}{a^2}-3$$
 as the difference of two squares.