5A

4a
$$2(x+5)$$
$$2x+10$$

4b
$$3(x-4)$$
$$3x-12$$

4c
$$-5(x+3)$$
$$-5x-15$$

4d
$$-4(x-2)$$
$$-4x+8$$

4e
$$3(2x-1)$$
$$6x-3$$

4f
$$4(3x+1)$$
$$12x+4$$

4g
$$-2(5x-3)$$
$$-10x+6$$

4h
$$-5(4x+3)$$
$$-20x-15$$

4i
$$x(2x+5)$$
$$2x^2+5x$$

4j
$$x(3x-1)$$
$$3x^2-x$$

4k
$$2x(1-x)$$
$$2x-2x^2$$

4l
$$3x(2-x)$$
$$6x-3x^2$$

4m
$$-2x(3x+2)$$
$$-6x^2-4x$$

4n
$$-3x(6x-2)$$
$$-18x^2+6x$$

4o
$$-5x(2-2x)$$
$$-10x+10x^2$$

4p
$$-4x(1-4x)$$
$$-4x+16x^2$$

4q
$$\frac{2}{5}(10x+4)$$
$$4x+\frac{8}{5}$$

4r
$$\frac{3}{4}(8x-5)$$
$$6x-\frac{15}{4}$$

4s
$$\frac{-1}{3}(6x+1)$$
$$-2x-\frac{1}{3}$$

4t
$$\frac{-1}{2}(4x-3)$$
$$-2x+\frac{3}{2}$$

4u
$$\frac{-3}{8}(24x-1)$$
$$-9+\frac{3}{8}$$

4v
$$\frac{-2}{9}(9x+7)$$
$$-2x-\frac{14}{9}$$

4w
$$\frac{3x}{4}(3x+8)$$
$$\frac{9}{4}x^2+6x$$

4x
$$\frac{2x}{5}(7-3x)$$
$$\frac{14}{5}x-\frac{6}{5}x^2$$

5a
$$x(3x-1)+x(4-x)$$
$$3x^2-x+4x-x^2$$
$$2x^2+3x$$

5b
$$x(5x+2)+x(x-5)$$
$$5x^2+2x+x^2-5x$$
$$6x^2-3x$$

5c
$$x(4x-3)-2x(x-5)$$
$$4x^2-3x-2x^2+10x$$
$$2x^2+7x$$

5d
$$3x(2x+4)-x(5-2x)$$
$$6x^2+12x-5x+2x^2$$
$$8x^2+7x$$

5e
$$4x(2x-1)+2x(1-3x)$$
$$8x^2-4x+2x-6x^2$$
$$2x^2-2x$$

5f
$$2x(2-3x)-3x(2x-7)$$
$$4x-6x^2-6x^2+21x$$
$$25x-12x^2$$

6a
$$(x+2)(x+8)$$
$$x^2+8x+2x+16$$
$$x^2+10x+16$$

6b
$$(x+3)(x+4)$$
$$x^2+4x+3x+12$$
$$x^2+7x+12$$

6c
$$(x+7)(x+5)$$
$$x^2+5x+7x+35$$
$$x^2+12x+35$$

6d
$$(x+8)(x-3)$$
$$x^2-3x+8x-24$$
$$x^2+5x-24$$

6e
$$(x+6)(x-5)$$
$$x^2-5x+6x-30$$
$$x^2+x-30$$

6f
$$(x-2)(x+3)$$
$$x^2+3x-2x-6$$
$$x^2+x-6$$

6g
$$(x-7)(x+3)$$
$$x^2+3x-7x-21$$

$$x^2 - 4x - 21$$

6h
$$(x - 4)(x - 6)$$
$$x^2 - 6x - 4x + 24$$
$$x^2 - 10x + 24$$

6i
$$(x - 8)(x - 5)$$
$$x^2 - 5x - 8x + 40$$
$$x^2 - 13x + 40$$

6j
$$(x + 5)^2$$
$$(x + 5)(x + 5)$$
$$x^2 + 5x + 5x + 25$$
$$x^2 + 10x + 25$$

6k
$$(x + 7)^2$$
$$(x + 7)(x + 7)$$
$$x^2 + 7x + 7x + 49$$
$$x^2 + 14x + 49$$

6l
$$(x + 6)^2$$
$$(x + 6)(x + 6)$$
$$x^2 + 6x + 6x + 36$$
$$x^2 + 12x + 36$$

6m
$$(x - 3)^2$$
$$(x - 3)(x - 3)$$
$$x^2 - 3x - 3x + 9$$
$$x^2 - 6x + 9$$

6n
$$(x - 8)^2$$
$$(x - 8)(x - 8)$$
$$x^2 - 8x - 8x + 64$$
$$x^2 - 16x + 64$$

6o
$$(x - 10)^2$$
$$(x - 10)(x - 10)$$
$$x^2 - 10x - 10x + 100$$
$$x^2 - 20x + 100$$

6p
$$(x + 4)(x - 4)$$
$$x^2 - 4x + 4x - 16$$

$$x^2 - 16$$

6q
$$(x + 9)(x - 9)$$
$$x^2 - 9x + 9x - 81$$
$$x^2 - 81$$

6r
$$(2x - 3)(2x + 3)$$
$$4x^2 + 6x - 6x - 9$$
$$4x^2 - 9$$

6s
$$(3x + 4)(3x - 4)$$
$$9x^2 - 12x + 12x - 16$$
$$9x^2 - 16$$

6t
$$(4x - 5)(4x + 5)$$
$$16x^2 + 20x - 20x - 25$$
$$16x^2 - 25$$

6u
$$(8x - 7)(8x + 7)$$
$$64x^2 + 56x - 56x - 49$$
$$64x^2 - 49$$

7a
$$(2x + 1)(3x + 5)$$
$$6x^2 + 10x + 3x + 5$$
$$6x^2 + 13x + 5$$

7b
$$(4x + 5)(3x + 2)$$
$$12x^2 + 8x + 15x + 10$$
$$12x^2 + 23x + 10$$

7c
$$(5x + 3)(2x + 7)$$
$$10x^2 + 35x + 6x + 21$$
$$10x^2 + 41x + 21$$

7d
$$(3x + 2)(3x - 5)$$
$$9x^2 - 15x + 6x - 10$$
$$9x^2 - 9x - 10$$

7e
$$(5x + 3)(4x - 2)$$
$$20x^2 - 10x + 12x - 6$$
$$20x^2 + 2x - 6$$

7f
$$(2x + 5)(3x - 5)$$
$$6x^2 - 10x + 15x - 25$$
$$6x^2 + 5x - 25$$

7g
$$(4x - 5)(4x + 5)$$
$$16x^2 + 20x - 20x - 25$$
$$16x^2 - 25$$

7h
$$(2x - 9)(2x + 9)$$
$$4x^2 + 18x - 18x - 81$$
$$4x^2 - 81$$

7i
$$(5x - 7)(5x + 7)$$
$$25x^2 + 35x - 35x - 49$$
$$25x^2 - 49$$

7j
$$(7x - 3)(2x - 4)$$
$$14x^2 - 28x - 6x - 12$$
$$14x^2 - 34x - 12$$

7k
$$(5x - 3)(5x - 6)$$
$$25x^2 - 30x - 10x + 18$$
$$25x^2 - 40x + 18$$

7l
$$(7x - 2)(8x - 2)$$
$$56x^2 - 14x - 16x + 4$$
$$56x^2 - 30x + 4$$

7m
$$(2x + 5)^2$$
$$(2x + 5)(2x + 5)$$
$$4x^2 + 10x + 10x + 25$$
$$4x^2 + 20x + 25$$

7n
$$(5x + 6)^2$$
$$(5x + 6)(5x + 6)$$
$$25x^2 + 30x + 30x + 36$$
$$25x^2 + 60x + 36$$

7o
$$(7x - 1)^2$$
$$(7x - 1)(7x - 1)$$
$$49x^2 + 7x - 7x - 1$$
$$49x^2 - 1$$

8a
$$3$$

8b

$$3$$

8c

$$3$$

8d

$$8$$

8e

$$1$$

8f

$$2$$

9a

$$2(x+3)(x+4)$$
$$2(x^2+4x+3x+12)$$
$$2x^2+8x+6x+24$$
$$2x^2+14x+24$$

9b

$$3(x+2)(x+7)$$
$$3(x^2+7x+2x+14)$$
$$3x^2+21x+6x+54$$
$$3x^2+27x+54$$

9c

$$-2(x+8)(x+2)$$
$$-2(x^2+2x+8x+16)$$
$$-2x^2-4x-16x-32$$
$$-2x^2-20x-32$$

9d

$$-4(x+9)(x+2)$$
$$-4(x^2+2x+9x+18)$$
$$-4x^2-8x-36x-72$$
$$-4x^2-44x-72$$

9e

$$5(x-3)(x+4)$$
$$5(x^2+4x-3x-12)$$
$$5x^2+20x-15x-72$$
$$5x^2+5x-72$$

9f

$$3(x+5)(x-3)$$
$$3(x^2-3x+5x-15)$$
$$3x^2-9x+15x-15$$
$$3x^2+6x-15$$

9g

$$-3(a+2)(a-7)$$
$$-3(a^2-7a+2a-14)$$

$$-3a^2+21a-6a+42$$
$$-3a^2+15x+42$$

9h

$$-5(a+2)(a-8)$$
$$-5(a^2-8a+2a-16)$$
$$-5a^2+40a-10a+80$$
$$-5a^2+30a+80$$

9i

$$4(a-3)(a-6)$$
$$4(a^2-6a-3a+18)$$
$$4a^2-24a-12a+54$$
$$4a^2-36a+54$$

9j

$$3(y-4)(y-5)$$
$$3(y^2-5y-4y+20)$$
$$3y^2-15y-12y+60$$
$$3y^2-27y+60$$

9k

$$-2(y-3)(y-8)$$
$$-2(y^2-8y-3y+24)$$
$$-2y^2+16y+6y-48$$
$$-2y^2+22y-48$$

9l

$$-6(y-4)(y-3)$$
$$-6(y^2-3y-4y+12)$$
$$-6y^2+18y+24y-72$$
$$-6y^2+42y-72$$

9m

$$3(2x+3)(2x+5)$$
$$3(4x^2+10x+6x+15)$$
$$12x^2+30x+18x+45$$
$$12x^2+48x+45$$

9n

$$6(3x-4)(x+2)$$
$$6(3x^2+6x-4x-8)$$
$$18x^2+36x-24x-48$$
$$18x^2+12x-48$$

9o

$$-2(x+4)(3x-7)$$
$$-2(3x^2-7x+12x-28)$$
$$-6x^2+14x-24x+56$$

$$-6x^2-10x+56$$

9p

$$2(x+3)^2$$
$$2(x+3)(x+3)$$
$$2(x^2+3x+3x+9)$$
$$2x^2+6x+6x+18$$
$$2x^2+12x+18$$

9q

$$4(m+5)^2$$
$$4(m+5)(m+5)$$
$$4(m^2+5m+5m+25)$$
$$4m^2+20m+20m+100$$
$$4m^2+40m+100$$

9r

$$2(a-7)^2$$
$$2(a-7)(a-7)$$
$$2(a^2-7a-7a+49)$$
$$2a^2-14a-14a+49$$
$$2a^2-28a+49$$

9s

$$-3(y-5)^2$$
$$-3(y-5)(y-5)$$
$$-3(y^2-5y-5y+25)$$
$$-3y^2+15y+15y-75$$
$$-3y^2+30y+75$$

9t

$$3(2b-1)^2$$
$$3(2b-1)(2b-1)$$
$$3(4b^2-2b-2b+1)$$
$$12b^2-6b-6b+3$$
$$12b^2-12b+3$$

9u

$$-3(2y-6)^2$$
$$-3(2y-6)(2y-6)$$
$$-3(4y^2-12y-12y+36$$
$$-12y^2+36y+36y+36$$
$$-12y^2+72$$

10a

$$(x+1)(x+3)+(x+2)(x+4)$$
$$(x^2+3x+x+3)+(x^2+4x+2x+8)$$
$$x^2+3x+x+3+x^2+4x+2x+8$$
$$2x^2+10x+11$$

10b

$$(x + 8)(x + 3) + (x + 4)(x + 5)$$
$$(x^2 + 3x + 8x + 24) + (x^2 + 5x + 4x + 20)$$
$$x^2 + 3x + 8x + 24 + x^2 + 5x + 4x + 20$$
$$2x^2 + 20x + 44$$

10c

$$(y + 3)(y - 1) + (y - 2)(y - 4)$$
$$(y^2 - y + 3y - 3) + (y^2 - 4y - 2y + 8)$$
$$y^2 - y + 3y - 3 + y^2 - 4y - 2y + 8$$
$$2y^2 - 6y + 5$$

10d

$$(y - 7)(y + 4) + (y + 5)(y - 3)$$
$$(y^2 + 4y - 7y - 28) + (y^2 - 3y + 5y - 15)$$
$$y^2 + 4y - 7y - 28 + y^2 - 3y + 5y - 15$$
$$2y^2 - y - 43$$

10e

$$(2a + 3)(a - 5) - (a + 6)(2a + 5)$$
$$(2a^2 - 7a - 15) - (2a^2 + 17a + 30)$$
$$2a^2 - 7a - 15 - 2a^2 - 17a - 30$$
$$-24a - 45$$

10f

$$(4b + 8)(b + 5) - (3b - 5)(b - 7)$$
$$(4b^2 + 20b + 8b + 40) - (3b^2 - 21b - 5b + 35)$$
$$4b^2 + 20b + 8b + 40 - 3b^2 + 21b + 5b - 35$$
$$b^2 + 54b + 5$$

10g

$$(x + 5)^2 - 7$$
$$(x + 5)(x + 5) - 7$$
$$(x^2 + 5x + 5x + 25) - 7$$
$$x^2 + 5x + 5x + 25 - 7$$
$$x^2 + 10x + 18$$

10h

$$(x - 7)^2 - 9$$
$$(x - 7)(x - 7) - 9$$
$$(x^2 - 7x - 7x + 49) - 9$$
$$x^2 - 7x - 7x + 49 - 9$$
$$x^2 - 14x + 40$$

10i

$$3 - (2x - 9)^2$$
$$3 - (2x - 9)(2x - 9)$$
$$3 - (4x^2 - 18x - 18x + 81)$$
$$3 - 4x^2 + 18x + 18x - 81$$
$$-4x^2 + 36x - 78$$

10j

$$14 - (5x + 3)^2$$
$$14 - (5x + 3)(5x + 3)$$
$$14 - (25x^2 + 15x + 15x + 9)$$
$$14 - 25x^2 - 15x - 15x - 9$$
$$-25x^2 - 30x + 5$$

11a

$$(x - 6)(x - 6)$$
$$x^2 - 6x - 6x + 36$$
$$x^2 - 12x + 36$$

11b

$$(x + 20)(x - 10)$$
$$x^2 - 10x + 20x - 200$$
$$x^2 + 10x - 200$$

12a

$$(a + b)(a - b)$$
$$a^2 - ab + ba - b^2$$
$$a^2 - b^2$$

12b

$$(a + b)^2$$
$$(a + b)(a + b)$$
$$a^2 + ab + ba + b^2$$
$$a^2 + 2ab + b^2$$

12c

$$(a - b)^2$$
$$(a - b)(a - b)$$
$$a^2 - ab - ba + b^2$$
$$a^2 - 2ab + b^2$$

12d

$$(a + b)^2 - (a - b)^2$$
$$(a + b)(a + b) - (a - b)(a - b)$$
$$(a^2 + 2ab + b^2) - (a^2 - 2ab + b^2)$$
$$a^2 + 2ab + b^2 - a^2 + 2ab - b^2$$
$$4ab$$

13a

$$6 \times 103$$
$$6 \times 100 + 6 \times 3$$
$$600 + 18$$
$$618$$

13b

$$4 \times 55$$
$$4 \times 50 + 4 \times 5$$
$$200 + 20$$
$$220$$

13c

$$9 \times 63$$
$$9 \times 60 + 9 \times 3$$
$$540 + 27$$
$$567$$

13d

$$8 \times 208$$
$$8 \times 200 + 8 \times 8$$
$$1600 + 64$$
$$1664$$

13e

$$7 \times 198$$
$$7 \times 100 + 7 \times 90 + 7 \times 8$$
$$700 + 630 + 56$$
$$1386$$

13f

$$3 \times 297$$
$$3 \times 200 + 3 \times 90 + 3 \times 7$$
$$600 + 270 + 21$$
$$891$$

13g

$$8 \times 495$$
$$8 \times 400 + 8 \times 90 + 8 \times 5$$
$$3200 + 720 + 40$$
$$3960$$

13h

$$5 \times 696$$
$$5 \times 600 + 5 \times 90 + 5 \times 6$$
$$3000 + 450 + 30$$
$$3480$$

14a

$$-x(x - 7)$$
$$-x^2 + 7x$$

14b

$$3a - 7(4 - a)$$
$$3a - 28 + 7a$$

$$10a - 28$$

14c

$$(2x + 3)^2$$
$$(2x + 3)(2x + 3)$$
$$4x^2 + 6x + 6x + 9$$
$$4x^2 + 12x + 9$$

14d

$$(x + 2)^2 - (x + 2)(x - 2)$$
$$(x + 2)(x + 2) - (x + 2)(x - 2)$$
$$(x^2 + 4x + 4) - (x^2 - 4)$$
$$x^2 + 4x + 4 - x^2 + 4$$
$$4x + 8$$

15a

$$(x + 2)(x + 3)(x + 1)$$
$$(x^2 + 3x + 2x + 6)(x + 1)$$
$$(x^2 + 5x + 6)(x + 1)$$
$$x^2(x + 1) + 5x(x + 1) + 6(x + 1)$$
$$x^3 + x^2 + 5x^2 + 5x + 6x + 6$$
$$x^3 + 6x^2 + 11x + 6$$

15b

$$(x + 4)(x + 2)(x + 5)$$
$$(x^2 + 2x + 4x + 8)(x + 5)$$
$$x^2 + 6x + 8)(x + 5)$$
$$x^2(x + 5) + 6x(x + 5) + 8(x + 5)$$
$$x^3 + 5x^2 + 6x^2 + 30x + 8x + 40$$
$$x^3 + 11x^2 + 38x + 40$$

15c

$$(x + 3)(x - 4)(x + 3)$$
$$(x^2 - 4x + 3x - 12)(x + 3)$$
$$(x^2 - x - 12)(x + 3)$$
$$x^2(x + 3) - x(x + 3) - 12(x + 3)$$
$$x^3 + 3x^2 - x^2 - 3x - 12x - 36$$
$$x^3 + 2x^2 - 15x - 36$$

15d

$$(x - 4)(2x + 1)(x - 3)$$
$$(2x^2 + x - 8x - 4)(x - 3)$$
$$(2x^2 - 7x - 4)(x - 3)$$
$$2x^2(x - 3) - 7x(x - 3) - 4(x - 3)$$
$$2x^3 - 6x^2 - 7x^2 + 21x - 4x + 12$$
$$2x^3 - 13x^2 + 17x + 12$$

15e

$$(x + 6)(2x - 3)(x - 5)$$
$$(2x^2 - 3x + 12x - 18)(x - 5)$$
$$(2x^2 + 9x - 18)(x - 5)$$
$$2x^2(x - 5) + 9x(x - 5) - 18(x - 5)$$
$$2x^3 - 10x^2 + 9x^2 - 45x - 18x + 90$$
$$2x^2 - x^2 - 63x + 90$$

15f

$$(2x - 3)(x - 4)(3x - 1)$$
$$(2x^2 - 8x - 3x + 12)(3x - 1)$$
$$(2x^2 - 11x + 12)(3x - 1)$$
$$2x^2(3x - 1) - 11x(3x - 1) + 12(3x - 1)$$
$$6x^3 - 2x^2 - 33x^2 + 11x + 36x - 12$$
$$6x^3 - 35x^2 + 47x - 12$$

16a

$$\frac{ab}{2} + \frac{ab}{2} + \frac{ab}{2} + \frac{ab}{2}$$
$$\frac{ab + ab + ab + ab}{2}$$
$$\frac{4ab}{2}$$
$$2ab$$

16b

$$(a + b)(a + b) - c^2$$
$$(a + b)^2 - c^2$$

16c

$$(a + b)^2 - c^2 = 2ab$$
$$(a + b)(a + b) - c^2 = 2ab$$
$$(a^2 + ab + ba + b^2) - c^2 = 2ab$$
$$a^2 + 2ab + b^2 - c^2 = 2ab$$
$$a^2 + b^2 - c^2 = 0$$
$$a^2 + b^2 = c^2$$

5B

3a
$$5(x-1) - a(x-1)$$
$$(x-1)(5-a)$$

3b
$$b(x+2) + 3(x+2)$$
$$(x+2)(b+3)$$

3c
$$a(x+5) - 4(x+5)$$
$$(x+5)(a-4)$$

3d
$$x(x+2) + 5(x+2)$$
$$(x+2)(x+5)$$

3e
$$x(x-4) - 2(x-4)$$
$$(x-4)(x-2)$$

3f
$$3(x+1) - x(x+1)$$
$$(x+1)(3-x)$$

3g
$$a(x+3) + (x+3)$$
$$(x+3)(a+1)$$

3h
$$x(x-2) - (x-2)$$
$$(x-2)(x-1)$$

3i
$$(x-6) - x(x-6)$$
$$(x-6)(1-x)$$

4a
$$x^2 - 9$$
$$x^2 - 3^2$$
$$(x+3)(x-3)$$

4b
$$x^2 - 25$$
$$x^2 - 5^2$$
$$(x+5)(x-5)$$

4c
$$y^2 - 49$$
$$y^2 - 7^2$$
$$(y+7)(y-7)$$

4d
$$y^2 - 1$$
$$y^2 - 1^2$$
$$(y+1)(y-1)$$

4e
$$4x^2 - 9$$
$$2^2 x^2 - 3^2$$
$$(2x+3)(2x-3)$$

4f
$$36a^2 - 25$$
$$6^2 a^2 - 5^2$$
$$(6a+5)(6a-5)$$

4g
$$1 - 81y^2$$
$$1^2 - 9^2 y^2$$
$$(1+9y)(1-9y)$$

4h
$$100 - 9x^2$$
$$10^2 - 3^2 x^2$$
$$(10+3x)(10-3x)$$

4i
$$25x^2 - 4y^2$$
$$5^2 x^2 - 2^2 y^2$$
$$(5x+2y)(5x-2y)$$

4j
$$64x^2 - 25y^2$$
$$8^2 x^2 - 5^2 y^2$$
$$(8x+5y)(8x-5y)$$

4k
$$9a^2 - 49b^2$$
$$3^2 a^2 - 7^2 b^2$$
$$(3a+7b)(3a-7b)$$

4l
$$144a^2 - 49b^2$$
$$12^2 a^2 - 7^2 b^2$$
$$(12a+7b)(12a-7b)$$

5a
$$2x^2 - 32$$
$$2(x^2 - 16)$$
$$2(x^2 - 4^2)$$
$$2(x+4)(x-4)$$

5b
$$5x^2 - 45$$
$$5(x^2 - 9)$$
$$5(x^2 - 3^2)$$
$$5(x+3)(x-3)$$

5c
$$6y^2 - 24$$
$$6(y^2 - 4)$$
$$6(y^2 - 2^2)$$
$$6(y+2)(y-2)$$

5d
$$3y^2 - 48$$
$$3(y^2 - 16)$$
$$3(y^2 - 4^2)$$
$$3(y+4)(y-4)$$

5e
$$3x^2 - 75y^2$$
$$3(x^2 - 25y^2)$$
$$3(x^2 - 5^2 y^2)$$
$$3(x+5y)(x-5y)$$

5f
$$3a^2 - 300b^2$$
$$3(a^2 - 100b^2)$$
$$3(a^2 - 10^2 b^2)$$
$$3(a+10b)(a-10b)$$

5g
$$12x^2 - 27y^2$$
$$3(4x^2 - 9y^2)$$
$$3(2^2 x^2 - 3^2 y^2)$$
$$3(2x+3y)(3x-3y)$$

5h
$$63a^2 - 112b^2$$
$$7(9a^2 - 16b^2)$$
$$3(3^2 a^2 - 4^2 b^2)$$
$$3(3a+4b)(3a-4b)$$

5i
$$(x+5)^2 - 16$$
$$(x+5)^2 - (4)^2$$
$$(x+5+4)(x+5-4)$$
$$(x+9)(x+1)$$

5j
$$(x-4)^2 - 9$$
$$(x-4)^2 - (3)^2$$
$$(x-4+3)(x-4-3)$$
$$(x-1)(x-7)$$

5k
$$(a-3)^2 - 64$$
$$(a-3)^2 - (8)^2$$

$$(a - 3 + 8)(a - 3 - 8)$$
$$(a + 5)(a - 11)$$

5l
$$(a - 7)^2 - 1$$
$$(a - 7)^2 - (1)^2$$
$$(a - 7 + 1)(a - 7 - 1)$$
$$(a - 6)(a - 8)$$

5m
$$(3x + 5)^2 - x^2$$
$$(3x + 5 + x)(3x + 5 - x)$$
$$(4x + 5)(2x + 5)$$

5n
$$(2y + 7)^2 - y^2$$
$$(2y + 7 + y)(2y + 7 - y)$$
$$(3y + 7)(y + 7)$$

5o
$$(5x + 11)^2 - 4x^2$$
$$(5x + 11)^2 - 2^2 x^2$$
$$(5x + 11 + 2x)(5x + 11 - 2x)$$
$$(7x + 11)(3x + 11)$$

5p
$$(3x - 5y)^2 - 25y^2$$
$$(3x - 5y)^2 - 5^2 y^2$$
$$(3x - 5y + 5y)(3x - 5y - 5y)$$
$$3x(3x - 10y)$$

6a
$$x^2 - 7$$
$$x^2 - \sqrt{7}^2$$
$$(x + \sqrt{7})(x - \sqrt{7})$$

6b
$$x^2 - 5$$
$$x^2 - \sqrt{5}^2$$
$$(x + \sqrt{5})(x - \sqrt{5})$$

6c
$$x^2 - 19$$
$$x^2 - \sqrt{19}^2$$
$$(x + \sqrt{19})(x - \sqrt{19})$$

6d
$$x^2 - 21$$
$$x^2 - \sqrt{21}^2$$
$$(x + \sqrt{21})(x - \sqrt{21})$$

6e
$$x^2 - 14$$
$$x^2 - \sqrt{14}^2$$
$$(x + \sqrt{14})(x - \sqrt{14})$$

6f
$$x^2 - 30$$
$$x^2 - \sqrt{30}^2$$
$$(x - \sqrt{30} - \sqrt{30}$$

6g
$$x^2 - 15$$
$$x^2 - \sqrt{15}^2$$
$$(x - \sqrt{15})(x - \sqrt{15})$$

6h
$$x^2 - 11$$
$$x^2 - \sqrt{11}^2$$
$$(x - \sqrt{11})(x - \sqrt{11}$$

6i
$$x^2 - 8$$
$$x^2 - \sqrt{8}^2$$
$$x^2 - 2\sqrt{2}^2$$
$$(x - 2\sqrt{2})(x - 2\sqrt{2})$$

6j
$$x^2 - 18$$
$$x^2 - \sqrt{18}^2$$
$$x^2 - 3\sqrt{2}^2$$
$$(x - 3\sqrt{2})(x - 3\sqrt{2})$$

6k
$$x^2 - 45$$
$$x^2 - \sqrt{45}^2$$
$$x^2 - 3\sqrt{5}^2$$
$$(x - 3\sqrt{5})(x - 3\sqrt{5})$$

6l
$$x^2 - 20$$
$$x^2 - \sqrt{20}^2$$
$$x^2 - 2\sqrt{5}^2$$
$$(x - 2\sqrt{5})(x - 2\sqrt{5})$$

6m
$$x^2 - 32$$
$$x^2 - \sqrt{32}^2$$
$$x^2 - 4\sqrt{2}^2$$

$$(x - 4\sqrt{2})(x - 4\sqrt{2})$$

6n
$$x^2 - 48$$
$$x^2 - \sqrt{48}^2$$
$$x^2 - 4\sqrt{3}^2$$
$$(x - 4\sqrt{3})(x - 4\sqrt{3})$$

6o
$$x^2 - 50$$
$$x^2 - \sqrt{50}^2$$
$$x^2 - 5\sqrt{2}^2$$
$$(x - 5\sqrt{2})(x - 5\sqrt{2})$$

6p
$$x^2 - 200$$
$$x^2 - \sqrt{200}^2$$
$$x^2 - 10\sqrt{2}^2$$
$$(x - 10\sqrt{2})(x - 10\sqrt{2})$$

6q
$$(x + 2)^2 - 6$$
$$(x + 2)^2 - \sqrt{6}^2$$
$$(x + 2 + \sqrt{6})(x + 2 - \sqrt{6})$$

6r
$$(x + 5)^2 - 10$$
$$(x + 5)^2 - \sqrt{10}^2$$
$$(x + 5 + \sqrt{10})(x + 5 - \sqrt{10})$$

6s
$$(x - 3)^2 - 11$$
$$(x - 3)^2 - \sqrt{11}^2$$
$$(x - 3 + \sqrt{11})(x - 3 - \sqrt{11})$$

6t
$$(x - 1)^2 - 7$$
$$(x - 1)^2 - \sqrt{7}^2$$
$$(x - 1 + \sqrt{7})(x - 1 - \sqrt{7})$$

6u
$$(x - 6)^2 - 15$$
$$(x - 6)^2 - \sqrt{15}^2$$
$$(x - 6 + \sqrt{15})(x - 6 - \sqrt{15})$$

6v
$$(x + 4)^2 - 21$$
$$(x + 4)^2 - \sqrt{21}^2$$
$$(x + 4 + \sqrt{21})(x + 4 - \sqrt{21})$$

6w
$$(x + 1)^2 - 19$$
$$(x + 1)^2 - \sqrt{19}^2$$

$$(x+1+\sqrt{19})(x+1-\sqrt{19})$$

6x
$$(x-7)^2 - 26$$
$$(x-7)^2 - \sqrt{26}^2$$
$$(x-7+\sqrt{26})(x-7-\sqrt{26})$$

7a
$$x^2 + 4x + ax + 4a$$
$$x(x+4) + a(x+4)$$
$$(x+4)(x+a)$$

7b
$$x^2 + 7x + bx + 7b$$
$$x(x+7) + b(x+7)$$
$$(x+7)(x+b)$$

7c
$$x^2 - 3x + ax - 3a$$
$$x(x-3) + a(x-3)$$
$$(x-3)(x+a)$$

7d
$$x^2 + 2x - ax - 2a$$
$$x(x+2) - a(x+2)$$
$$(x+2)(x-a)$$

7e
$$x^2 + 5x - bx - 5b$$
$$x(x+5) - b(x+5)$$
$$(x+5)(x-b)$$

7f
$$x^2 + 3x - 4ax - 12a$$
$$x(x+3) - 4a(x+3)$$
$$(x+3)(x-4a)$$

7g
$$x^2 - ax - 4x + 4a$$
$$x(x-a) - 4(x-a)$$
$$(x-a)(x-4)$$

7h
$$x^2 - 2bx - 5x + 10b$$
$$x(x-2b) - 5(x-2b)$$
$$(x-2b)(x-5)$$

7i
$$3x^2 - 6ax - 7x + 14a$$
$$3x(x-2a) - 7(x-2a)$$
$$(x-2a)(3x-7)$$

8a
$$x^2 - \frac{2}{9}$$
$$x^2 - \frac{\sqrt{2}}{3}^2$$
$$(x + \frac{\sqrt{2}}{3})(x - \frac{\sqrt{2}}{3})$$

8b
$$x^2 - \frac{3}{4}$$
$$x^2 - \frac{\sqrt{3}}{2}^2$$
$$(x + \frac{\sqrt{3}}{2})(x - \frac{\sqrt{3}}{2})$$

8c
$$x^2 - \frac{7}{16}$$
$$x^2 - \frac{\sqrt{7}}{4}^2$$
$$(x + \frac{\sqrt{7}}{4})(x - \frac{\sqrt{7}}{4})$$

8d
$$x^2 - \frac{5}{36}$$
$$x^2 - \frac{\sqrt{5}}{6}^2$$
$$(x + \frac{\sqrt{5}}{6})(x - \frac{\sqrt{5}}{6})$$

8e
$$(x-2)^2 - 20$$
$$(x-2)^2 - \sqrt{20}^2$$
$$(x-2)^2 - 2\sqrt{5}^2$$
$$(x-2+2\sqrt{5})(x-2-2\sqrt{5})$$

8f
$$(x+4)^2 - 27$$
$$(x+4)^2 - \sqrt{27}^2$$
$$(x+4)^2 - 3\sqrt{3}^2$$
$$(x+4+3\sqrt{3})(x+4-3\sqrt{3})$$

8g
$$(x+1)^2 - 75$$
$$(x+1)^2 - \sqrt{75}^2$$
$$(x+1)^2 - 5\sqrt{3}^2$$
$$(x+1+5\sqrt{3})(x+1-5\sqrt{3})$$

8h
$$(x-7)^2 - 40$$

8a (continued)
$$(x-7)^2 - \sqrt{40}^2$$
$$(x-7)^2 - 2\sqrt{10}^2$$
$$(x-7+2\sqrt{10})(x-7-2\sqrt{10})$$

8i
$$3x^2 - 4$$
$$\sqrt{3}^2 x^2 - 2^2$$
$$(\sqrt{3}x + 2)(\sqrt{3}x - 2)$$

8j
$$5x^2 - 9$$
$$\sqrt{5}^2 x^2 - 3^2$$
$$(\sqrt{5}x + 3)(\sqrt{5}x - 3)$$

8k
$$7x^2 - 5$$
$$\sqrt{7}^2 x^2 - \sqrt{5}^2$$
$$(\sqrt{7}x + \sqrt{5})(\sqrt{7}x - \sqrt{5})$$

8l
$$6x^2 - 11$$
$$\sqrt{6}^2 x^2 - \sqrt{11}^2$$
$$(\sqrt{6}x + \sqrt{11})(\sqrt{6}x - \sqrt{11})$$

8m
$$-9 + 2x^2$$
$$2x^2 - 9$$
$$\sqrt{2}^2 x^2 - 3^2$$
$$(\sqrt{2}x + 3)(\sqrt{2}x - 3)$$

8n
$$-16 + 5x^2$$
$$5x^2 - 16$$
$$\sqrt{5}^2 x^2 - 4^2$$
$$(\sqrt{5}x + 4)(\sqrt{5}x - 4)$$

8o
$$-10 + 3x^2$$
$$3x^2 - 10$$
$$\sqrt{3}^2 x^2 - \sqrt{10}^2$$
$$(\sqrt{3}x + \sqrt{10})(\sqrt{3}x - \sqrt{10})$$

8p
$$-7 + 13x^2$$
$$13x^2 - 7$$
$$\sqrt{13}^2 x^2 - \sqrt{7}^2$$
$$(\sqrt{13}x + \sqrt{7})(\sqrt{13}x - \sqrt{7})$$

9a
$$xy - 6 - 3x + 2y$$
$$xy + 2y - 3x + 6$$
$$y(x+2) - 3(x+2)$$
$$(x+2)(y-3)$$

9b

$$ax - 12 + 3a - 4x$$

$$ax + 3a - 4x - 12$$

$$a(x + 3) - 4(x + 3)$$

$$(x + 3)(a - 4)$$

9c

$$ax - 10 + 5x - 2a$$

$$ax - 2a + 5x - 10$$

$$a(x - 2) + 5(x - 2)$$

$$(x - 2)(a + 5)$$

9d

$$xy + 12 - 3y - 4x$$

$$xy - 3y - 4x + 12$$

$$y(x - 3) - 4(x - 3)$$

$$(x - 3)(y - 4)$$

9e

$$2ax + 3 - a - 6x$$

$$2ax - 6x - a + 3$$

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

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

9f

$$2ax - 20 + 8a - 5x$$

$$2ax + 8a - 5x - 20$$

$$2a(x + 4) - 5(x + 4)$$

$$(x + 4)(2a - 5)$$

10a

$$5x^2 - 120$$

$$5(x^2 - 24)$$

$$5(x^2 - \sqrt{24}^2)$$

$$5(x^2 - 2\sqrt{6}^2)$$

$$5(x + 2\sqrt{6})(x - 2\sqrt{6})$$

10b

$$3x^2 - 162$$

$$3(x^2 - 54)$$

$$3(x^2 - \sqrt{54}^2)$$

$$3(x^2 - 3\sqrt{6}^2)$$

$$3(x + 3\sqrt{6})(x - 3\sqrt{6})$$

10c

$$7x^2 - 126$$

$$7(x^2 - 18)$$

$$7(x^2 - \sqrt{18}^2)$$

$$7(x^2 - 3\sqrt{2}^2)$$

$$7(x + 3\sqrt{2})(x - 3\sqrt{2})$$

10d

15a

$$(x + 2)^2 - (x + 3)^2$$

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

$$x^2 + 4x + 4 - x^2 - 6x - 9$$

$$-2x - 5$$

$$-(2x + 5)$$