

Factor each:

1. $9 + 3x$
2. $5 - 15n$
3. $2x - 10$
4. $4y - 16$
5. $3x^2 - x$
6. $5n^2 - 2n$
7. $2x^2 - 6x$
8. $y^2 - 2y$
9. $28n^2 - 7n$
10. $2xy - y^2$
11. $4x^2 - 8x$
12. $21y^2 - 7xy$
13. $25mn - 5m^2n^2$
14. $8a^2b - 24ab^2$
15. $9x^2 - 27x^2y$
16. $12a^2 + 36a^2b$
17. $3x^2 - 6x + 21$
18. $5n^3 + 15n^2 + 25n$
19. $55y^2 + 22y + 44$
20. $2n^2 + 4mn + 80m^2$
21. $4a^2 + 12ab - 16b^2$
22. $3x^2 - 12xy + 9y^2$
23. $6x^2 + 6x + 24xy + 42$
24. $-13x + 26x^2 + 39x^3$
25. $-50a^2 + 25b^2 + 75ab$
26. $48mn + 72m^2n^2 + 60m^3n^3$
27. $56x^3y^3 - 72x^2y^2 - 64xy$
28. $32a^2b^4 - 16ab^3 + 48a^3b^5$
29. $x(a - b) + 2(a - b)$
30. $y(a + d) - 4(a + d)$
31. $n(m - x) + y(m - x)$
32. $a(b - 3d) + b(b - 3d)$
33. $2(a + b) - a(a + b)$
34. $(3x - 2y)x - (3x - 2y)y$
35. $x(y - 2) - 4(y - 2)$
36. $4(x - 2) + 2x(x - 2)$
37. $5(x - y) + y(x - y)$
38. $2a(c + d) - b(c + d)$
39. $5b(x - 2) + c(x - 2)$
40. $r(y + 3) - s(y + 3)$
41. $s(a - 2) + t(a - 2)$
42. $2(b - 1) + x(b - 1)$
43. $x(a + b) - y(a + b)$
44. $3(c - d) + x(c - d)$
45. $4(d - h) + y(d - h)$
46. $5(a + 5) - b(a + 5)$
47. $7(x + 2y) - x(x + 2y)$
48. $b(r - s) + a(r - s)$
49. $h(x + y) - k(x + y)$
50. $3(2a - 1) - y(2a - 1)$
51. $4(3y + 2) + z(3y + 2)$
52. $6(2a - 5) + b(2a - 5)$
53. $c(a + b) - d(a + b)$
54. $s(x - 2y) + t(x - 2y)$
55. $3a(x + z) - (x + z)$

Write each in factored form:

1. $y(y - 1) + 2(y - 1)$
2. $a(a - 8) + 9(a - 8)$
3. $(4c + 5d)x - (4c + 5d)y$
4. $(x + 1)(2x + 3) - (x + 1)$
5. $(x - y)^2 + (x + y)(x - y)$
6. $2m(m - n) - (m + n)(m - n)$
7. $(b - 3c)x^2 + (b - 3c)y^2$
8. $(x + y)a + (x + y)b$
9. $5(3x - 2) - x(3x - 2)$
10. $5x(2x + 1) - 2(2x + 1)$
11. $(2x + y)x + (2x + y)5$
12. $3a(a + b) + 2b(a + b)$
13. $(a - 2b)3a + (a - 2b)13b$
14. $n(n - 1) + 3(n - 1)$
15. $x(2x + 3) + 2(2x + 3)$
16. $(3a - b)b + (3a - b)a$
17. $(c + 3b)2c + (c + 3b)3b$
18. $t^2(y + 5) - 5(y + 5)$
19. $k^2(t + 1) + 2k(t + 1)$
20. $n^2(2n + 1) + (2n + 1)$
21. $2m^2(3m + 1) + (3m + 1)$
22. $a^2(a - b) + b(a - b)$
23. $2n(n^2 + 1) + 3(n^2 + 1)$
24. $5c(a^3 + b) - (a^3 + b)$
25. $m(m + 2n) - n(m + 2n)$
26. $x^2 + x + xy + y$
27. $n^2 + 2n + np + 2p$
28. $a^2 - 3a + ay - 3y$
29. $k^2 + 3k + 2k + 6$
30. $3ab - b^2 + 3a^2 - ab$
31. $2x^2 + 3x + 6 + 4x$
32. $2x^2 - 4x + xz - 2z$
33. $6y^2 - 3y + 2py - p$
34. $n^3 - n^2 - nq + q$
35. $n^2m + 2nm + 2n + n^2$
36. $4x + 8x^3 + 1 + 2x^2$
37. $k^2 + 2k + kt + 2t$
38. $x^2 - x + xy - y$
39. $dg + dm - fg - fm$
40. $rs - rt - ks + kt$
41. $3b^2 + 2b + 12b + 8$
42. $m^2 + 14a + 2m + 7am$
43. $2p^2 + 2a + 4ap + p$
44. $3x^2 - 2x + 6x - 4$
45. $10y^2 - 3 + 15y - 2y$
46. $x^3 - 21 - 3x^2 + 7x$
47. $r^3 - s^3 - sr^2 + rs^2$
48. $mr - ms + nr - ns$
49. $x^3 + x^2 + x + 1$
50. $2a^3 - 5a - 2a^2 + 5$

Write each in factored form: (Continued)

51. $m^3 + 3m^2 - 2m - 6$

52. $x^2y - 2xy + 4x - 8$

53. $ac + ad - 2bd - 2bc$

54. $mr - 3nr - 3ns + ms$

55. $5mr - 3ns - 3ns + 5nr$

56. $3x^3 - 6x^2 + x - 2$

57. $a^2x - a^2by + cx - bcy$

58. $5a^3 - 55a - 2a^2 + 22$

59. $2ax + 3bx - 2ay - 3by$

60. $2cx + 4dx - 3cy - 6dy$

61. $z^3 - 4z + z^2 - 4$

62. $ac - 3bc - ad + 3bd$

63. $3mx - 2nx - 3m + 2n$

64. $6 + 3x^2 - 8x - 4x^3$

Factor:

1. $x^2 + 8x + 12$
2. $x^2 + 11x + 24$
3. $t^2 + 10t + 16$
4. $y^2 + 10y + 24$
5. $r^2 + 11r + 30$
6. $w^2 + 12w + 27$
7. $p^2 - 7p + 12$
8. $x^2 - 10x + 21$
9. $a^2 - 12a + 35$
10. $t^2 - 7t + 10$
11. $r^2 - 9r + 20$
12. $b^2 - 9b + 18$
13. $x^2 + 14xy + 40y^2$
14. $c^2 - 9cd + 14d^2$
15. $m^2 + 14mn + 33n^2$
16. $a^2 - 12ab + 32b^2$
17. $x^2 + 11x + 18$
18. $h^2 + 13h + 36$
19. $y^2 - 15y + 56$
20. $x^2 - 19x + 90$
21. $a^2 - 47a + 90$
22. $m^2 + 21m + 90$
23. $r^2 + 33r + 90$
24. $33 - 34b + b^2$
25. $14 - 15k + k^2$
26. $42 + 17c + c^2$
27. $52 + 17s + s^2$
28. $x^2 + 20x + 51$
29. $y^2 + 52y + 51$
30. $x^2 + 14xy + 24y^2$
31. $y^2 + 26yz + 48z^2$
32. $m^2 - 22mn + 72n^2$
33. $s^2 - 21st + 20t^2$
34. $b^2 - 23bc + 76c^2$
35. $a^2 - 22ab + 57b^2$
36. $x^2 - 29xb + 120b^2$
37. $z^2 - 23zd + 120d^2$
38. $n^2 - 15n + 26$
39. $p^2 - 23p + 60$
40. $42 - 13u + u^2$
41. $r^2 + 8rs + 15s^2$
42. $m^2 - 11mn + 28n^2$
43. $a^2 + a - 6$
44. $b^2 + 5b - 6$
45. $x^2 - 2x - 3$
46. $y^2 - 4y - 5$
47. $c^2 - 3c - 10$
48. $k^2 + k - 12$
49. $u^2 + 7u - 18$
50. $v^2 - 3v - 18$

Factor: (Continued)

51. $z^2 - 4z - 21$

52. $t^2 + 5t - 14$

53. $x^2 + x - 56$

54. $y^2 - 2y - 63$

55. $a^2 + a - 20$

56. $c^2 - c - 42$

57. $x^2 - 4x - 60$

58. $z^2 + 5z - 50$

59. $a^2 - 2ab - 8b^2$

60. $c^2 + 3cd - 10d^2$

61. $p^2 - 5pq - 24q^2$

62. $u^2 + 6uv - 55v^2$

63. $r^2 - 10rs - 24s^2$

64. $m^2 + 16mn - 36n^2$

Factor completely:

- | | | |
|-------------------------|-----------------------|--------------------------------|
| 1. $x^2 - 16$ | 26. $36x^2y^2 - 1$ | 51. $(x + 1)^2 - (x - 1)^2$ |
| 2. $h^2 - 9$ | 27. $16r^2 - 25s^2$ | 52. $9(x - 1)^2 - 25(x + 1)^2$ |
| 3. $x^2 - 4y^2$ | 28. $4 - x^2y^2$ | 53. $(a + 2b)^2 - x^4$ |
| 4. $a^2 - 4b^2$ | 29. $49 - a^2b^2$ | 54. $(3a - 1)^2 - y^2$ |
| 5. $s^2 - r^2$ | 30. $49a^2 - 64b^2$ | 55. $(x + 1)^2 - 1$ |
| 6. $a^2 - b^2y^6$ | 31. $16 - 9a^2b^2$ | 56. $(x + 4)^2 - 9$ |
| 7. $16a^2 - b^4$ | 32. $121a^2b^2 - x^2$ | 57. $(a + 3b)^2 - 16$ |
| 8. $256x^4 - y^2$ | 33. $16m^2 - 25$ | 58. $(x - 2y)^2 - 25$ |
| 9. $4x^4 - z^2$ | 34. $81a^2 - 16$ | 59. $(x + 1)^2 - 36y^2$ |
| 10. $m^2 - 16n^4$ | 35. $49a^2 - 16$ | 60. $(y - 4)^2 - 81$ |
| 11. $196b^2 - 121x^2$ | 36. $100x^2 - 9$ | 61. $(2y + 1)^2 - 100$ |
| 12. $289x^2 - 676y^2$ | 37. $121a^2 - 36$ | 62. $(3x - 2)^2 - 49$ |
| 13. $4r^2t^2 - 9$ | 38. $25r^2 - 36$ | 63. $121 - (x + 2)^2$ |
| 14. $m^2n^2 - 144$ | 39. $64b^2 - 81$ | 64. $144 - (y - 4)^2$ |
| 15. $1 - 9n^2$ | 40. $64 - 25r^2$ | |
| 16. $25m^2 - 1$ | 41. $4r^2 - 64$ | |
| 17. $x^3y - xy^5$ | 42. $9p^2 - 81$ | |
| 18. $a^6b - a^2b^3$ | 43. $4x^2 - 625$ | |
| 19. $2p^3q^4 - 72pq^4$ | 44. $49m^2 - 64$ | |
| 20. $147x^2y - 3x^4y^3$ | 45. $5p^2 - 80t^2$ | |
| 21. $2a^4 - 32$ | 46. $147z^2 - 75$ | |
| 22. $x^2 - 49$ | 47. $r^4 - 1$ | |
| 23. $b^2 - 81$ | 48. $t^4 - k^4$ | |
| 24. $100a^2 - 1$ | 49. $(x + 3)^2 - x^2$ | |
| 25. $9a^2 - 25$ | 50. $y^2 - (y - 2)^2$ | |

Factor completely:

1. $x^2 + 2bx + b^2$
2. $g^2 - 2gh + h^2$
3. $a^2 - 12a + 36$
4. $y^2 + 16y + 64$
5. $b^2 + 14b + 49$
6. $n^2 + 18n + 81$
7. $4a^2 - 4ab + b^2$
8. $25a^2 - 10ab + b^2$
9. $9x^2 + 6x + 1$
10. $16x^2 + 8x + 1$
11. $1 + 2n + n^2$
12. $1 + 4b + 4b^2$
13. $49x^2 - 28x + 4$
14. $25x^2 - 30x + 9$
15. $25a^2 + 60ab + 36b^2$
16. $144n^2 + 120nx + 25x^2$
17. $144x^2 - 24x + 1$
18. $16x^2 - 24xy + 9y^2$
19. $36a^2 + 60ab + 25b^2$
20. $16r^2 + 40rt + 25t^2$
21. $r^2 + 25 - 10r$
22. $4mn + n^2 + 4m^2$
23. $121a^2b^2 - 22ab + 1$
24. $243m^2n^2 + 54mn + 3$
25. $3k + 42k^2 + 147k^3$
26. $8n + n^2 + 2n^3$
27. $z^2 - 4a^2z + 4a^4$
28. $x^4 + 2x^2y + y^2$
29. $y^6 - 8y^3 + 16$
30. $n^4 - 2n^2 + 1$
31. $x^4 - 18x^2 + 81$
32. $a^8 - 6a^4 + 9$
33. $1 - 4t + 4t^2$
34. $25 + 10r + r^2$
35. $64y^2 - 16yz + z^2$
36. $9 + 12p + 4p^2$
37. $36 - 60q + 25q^2$
38. $4x^2y^2 - 12xyz + 9z^2$
39. $16t^2 + 24tuv + 9u^2v^2$
40. $25y^4 - 10y^2x + x^2$
41. $7x^3 + 14x^2 + 7x$
42. $20ay^2 - 60ay + 45a$
43. $x^3 + 25x - 10x^2$
44. $24x + 24x^2 + 6x^3$
45. $3z + 42z^2 + 147z^3$
46. $4y^4 - 8y^2x^2 + 4x^4$
47. $6a^4 - 12a^2b^2 + 6b^4$
- *48. $x^2 + 2x + 1 - y^2$
- *49. $t^2 - 4t + 4 - 5^2$
- *50. $a^2 - b^2 + 2b - 1$

Factor completely: (Continued)

*51. $4p^2 - q^2 - 6q - 9$

*52. $x^2 - 4xy + 4y^2 - 9$

*53. $a^2 + 6ab + 9b^2 - 1$

*54. $m^2 - x^2 + 2x - 1$

*55. $n^2 - y^2 - 6y - 9$

56. $m^2 + 26m + 169$

57. $64t^2 - 112st + 49s^2$

58. $81x^2 + 36x + 4$

*59. $n^2 - 18n + 81 - p^4$

*60. $r^2 - 49x^2 + 28x - 4$

*61. $c^2 - 12c + 36 - d^2$

**62. $16x^2 - 25n^2 + 1 - 8x$

**63. $x^4 - 4z^4 + 9y^4 - 6x^2y^2$

**64. $9a^4 - 25b^2 - 4c^2 + 20bc$

Factor completely:

1. $bx^2 - b$
2. $ar - a^3r^3$
3. $9y^3 - 9y$
4. $8t^2 - 98$
5. $s^3 - s$
6. $36x^2 - 100$
7. $11x^2 - 11y^2$
8. $2a^2 - 72b^2$
9. $3a^2 - 75d^2$
10. $\pi R^2 - r\pi^2$
11. $25m^2 - 100n^2$
12. $20c^3 - 45ca$
13. $ab^4 - ax^4$
14. $5x^8 - 5y^8$
15. $6m^5 - 6m$
16. $a^5r^5 - ar^5$
17. $2b^4 - 32x^4$
18. $64x^4 - 625y^4$
19. $2x^2 + 12x + 18$
20. $9a^4 - 18ab + 9b^2$
21. $4bx^2 - 8bxy + 4by^2$
22. $27x^3 - 72x^2 + 48x$
23. $3b^2 + 21b + 36$
24. $5c^2 - 25c + 30$
25. $4a^2b + 12ab - 72b$
26. $9n^4 - 27n^3 - 90n^2$
27. $a^3 - 8a^2 + 16a$
28. $2ab^2 + 20ab + 50a$
29. $3x^4 + 42x^3 + 147x^2$
30. $20a^4b - 60a^3b^2 + 45a^2b^3$
31. $y^3 - y^2 - 2y$
32. $3cd^2 - 3cd - 126c$
33. $30x^3y + 55x^2y^2 - 50xy^3$
34. $36r^6s^2 + 78r^5s^3 - 30r^4s^4$
35. $x(x^2 - 4) + 2(x^2 - 4)$
36. $a^3(a^2 - c^2) + b^2(a^2 - c^2)$
37. $b^2(b^2 - 9) - 16(b^2 - 9)$
38. $25(1 - c^2) - c^6(1 - c^2)$
39. $x^2(x - 3) - 4(x - 3)$
40. $x^2(x^2 - y^2) - y^2(x^2 - y^2)$
41. $n^2(n^4 - 16) - 25(n^4 - 16)$
42. $m^4x^4(m^2 - n^2) - y^2(m^2 - n^2)$
- *43. $x^2 + 2xy + y^2 - 4$
44. $4x^2 + 12xy + 9y^2 - 25z^2$
45. $a^2 - 6a + 9 - b^2$
46. $6r^2 - 12rs + 54s^2 - t^2$
47. $a^2 - b^2 - 2bc - c^2$
48. $9 - m^2 - 2mn - n^2$
49. $36a^2 - 9b^2 + 24bc - 16c^2$
50. $16c^2 - r^2 + 2rs - s^2$

Factor completely:

1. $2n^2 - 14n - 36$
2. $3ac^2 + 4ac - 7a$
3. $9bx^2 - 16b$
4. $3s^3 - 13s^2 - 10s$
5. $6x^2t - 7xt - 5t$
6. $3x^2 + 9x - 120$
7. $2m^2 - 20m + 50$
8. $18c^2 - 2x^2$
9. $ax^2 - 2ax - 35a$
10. $5r^2s + 16rs + 3s$
11. $5p^2r + 5pr - 10p$
12. $9a - am^2$
13. $2aw^2 - 3aw - 20a$
14. $15t^2 - 6t - 21$
15. $3x^2y + 7y + 22xy$
16. $b - 16 + 15b^2$
17. $-25x + x^2 + 100$
18. $c^2x + 18x - 19cx$
19. $a^2b - 50ab + 49b$
20. $9x^2 - 4xy - 13y^2$
21. $45x^2 - 80$
22. $3k^2 + 33k + 72$
23. $9ax^2 - 4ax - 13a$
24. $c^2d^2 + 9cd - 52$
25. $x^3 - 6x^2 - 7x$
26. $2y^3 + y^2 - y$
27. $am^2 - 7am + 44a$
28. $6r^4 + 7r^3 - 5r^2$
29. $6nx^2 + 18nx + 12n$
30. $2ax^2 - 10ax + 12a$
31. $3c^2d + 6cd - 24d$
32. $14mx^2 - 10mxy - 4my^2$
33. $5x^2t - 180y^2t$
34. $16x^2y^3 - 8xy^3 + y^3$
35. $49a^3 - 36a^3x^2$
36. $4ar^2 - 12ars + 9as^2$
37. $a^2 - 22a^2x^2 - 75a^2x^4$
38. $81 - m^4$
39. $2m^3n + m^2n^2 - 28mn^3$
40. $12x^2 - 2x - 80$
41. $4x^2 + 12y - y^2 - 36$
42. $12y - 27y^5$
43. $6a^3b + 18ab^3 + 42a^2b^2$
44. $(3x - 5y)^2 - (2x - 7y)^2$
45. $ab^2 - 4b^2 - a + 4$
46. $15h^2x - 16hx - 15x$
47. $x^4 + 5x^2 - 36$
48. $1 - 8c^2 - 9c^4$
49. $9c^2 - (a - b)^2$
50. $18bc^2 - 2bx^2$

Factor completely: (Continued)

51. $a^2y + 7aby - 60b^2y$

52. $x^2 - x^2y^2$

53. $5a^3 - 45a$

54. $6a^2b^2 - 54b^4$

55. $c^2 - a^2 - 10ab - 25b^2$

56. $x^4 - x^2 - 132$

57. $x^6 - 8x^4 + 16x^2$

58. $16a^2 - (3a + 2)^2$

59. $2ax^2 - 36ax - 126a$

60. $a^3 - 3a^2 - 4a + 12$

61. $9m^4 + 6m^2 - 35$

62. $35x^2 - ax - 12a^2$

63. $a^4 - 2a^2 + 1$

64. $a^2x^2 - x^2 - a^2 + 1$

Factor completely:

1. $x^2 - 6x + 8$
2. $9x^8 - a^6$
3. $3s + 2 + 6s^4 + 4s^3$
4. $5x^2y^4 - 10x^4y^3$
5. $49y^2 - 14yz + z^2$
6. $x^2 + 6x + 9$
7. $x^2 - 16x + 64$
8. $as^2 - 3bst - ast + 3bt^2$
9. $4x^{16} - y^{20}$
10. $25 - 16a^2$
11. $2x^2 - x - 28$
12. $16 - 25y^2$
13. $9x^2 + 25xy + 16y^2$
14. $16a^2 + 8ax + x^2$
15. $x^4 + x^2y^2 + y^4$
16. $12a^2 + 11a + 2$
17. $2m^3n - 3mn^3$
18. $a^8 + a^4b^4 + b^8$
19. $25 + 80x + 64x^2$
20. $p^4 + 2p^2q^2 + q^4$
21. $6x^2 + 7x - 3$
22. $a^2b^2 - 1$
23. $9x^4 + 20x^2y^2 + 16y^4$
24. $6a^2 - a - 2$
25. $4a^4 + 12a^2b^2 + 9b^4$
26. $49x^2 - 28xy + 4y^2$
27. $3mn - 6m^2 - 2am - an$
28. $x^2 - 100$
29. $5m^2 + 18m - 8$
30. $1 - 20b + 100b^2$
31. $16a^4 - 8a^2x^2 + x^4$
32. $4ax^2y - 6a^2xy^2$
33. $121a^2 - 36b^2$
34. $14a^2 - 39a + 10$
35. $4xy^2 - 2xy$
36. $81a^2 + 126ab + 49b^2$
37. $49a^{14} - y^{12}$
38. $5x^2 + 26x - 24$
39. $25x^4 - 29x^2y^2 + 4y^4$
40. $2ar + 2as + 2br + 2bs$
41. $x^4 + 2x^2 + 1$
42. $64a^2 - 9b^6$
43. $2x^2 - 5x + 2$
44. $n^8 + 2n^4 + 1$
45. $2m^2 - m - 3$
46. $m^2n^2 - 16mna^2 + 64a^4$
47. $4a^2 - 20ax + 25x^2$
48. $81a^4b^4 - c^4$
49. $x^2 - xy - 6x + 6y$
50. $7c^2 - 3c - 4$

Factor completely:

1. $15x^2 + 11x + 2$
2. $10x^2 + 37x + 7$
3. $12x^2 + 30x + 15$
4. $6x^2 + 19x + 10$
5. $12x^2 + 20x + 3$
6. $14x^2 + 39x + 10$
7. $3x^2 + 31x + 56$
8. $8x^2 + 22x + 5$
9. $35x^2 + 29x + 6$
10. $12x^2 + 41x + 35$
11. $3x^2 + 10x + 3$
12. $5x^2 + 21x + 4$
13. $6x^2 - 13x + 6$
14. $15x^2 - 16x + 4$
15. $20x^2 - 39x + 18$
16. $7x^2 - 50x + 7$
17. $3x^2 - 10x + 3$
18. $15x^2 - 46x + 35$
19. $11x^2 - 122x + 11$
20. $12x^2 - 37x + 21$
21. $6x^2 - 25x + 25$
22. $30x^2 - 23x + 4$
23. $4x^2 - 29x + 30$
24. $6x^2 - 19x + 15$
25. $2x^2 - 7x - 15$
26. $7x^2 + 51x + 14$
27. $2x^2 - x - 45$
28. $5x^2 + 23x - 10$
29. $3x^2 + 5x - 28$
30. $35x^2 + 18x - 8$
31. $6x^2 + 7x - 3$
32. $10x^2 + 19x - 15$
33. $30x^2 - 3x - 6$
34. $10x^2 + 7x - 12$
35. $21x^2 - 40x - 21$
36. $20x^2 + 9x - 20$
37. $4x^2 + 2x - 30$
38. $12x^2 + 28x - 24$
39. $14x^2 - 74x + 20$
40. $12x^2 + 12x - 9$
41. $10x^2 - 25x + 10$
42. $7x^2 + 21x + 14$
43. $36x^2 + 66x - 60$
44. $40x^2 + 184x - 80$
45. $6x^2 + 3x - 45$
46. $6a^2 + 19a + 15$
47. $1 - 16a^2$
48. $60a^2 + 5a - 30$
49. $12a^2 - 32a + 21$
50. $24a^2 + 34a + 12$

Factor completely: (Continued)

51. $54x^2 + 3x - 35$

52. $2y^2 + 7y + 3$

53. $14y^2 - 56$

54. $2w^2 + 36w + 162$

55. $8z^2 + 112z + 392$

56. $6x^2 - 11x + 5$

57. $5r^2 - 13r + 6$

58. $49n^2 - 14n + 1$

59. $25x^2 - 20x + 4$

60. $-5ax^2 - 5ay^2$

61. $9x^2 - 24x + 16$

62. $4x^2 - 28x + 49$

63. $169a^2 - 49b^4$

64. $n^2 - 18n - 40$