MTH-4106 Factoring and Algebraic Fractions: **Worksheet #7**

Factor the following polynomials using the appropriate method:

1. $14a^4y^6c^2 - 7y^2cd^3 + 21a^2yc^6e - 7yc$

2. $abc - c^2 - abd + cd + abe - ce$

3. $x^2 - 5x - 14$

4. $3a^2 - 8ab + 4b^2$

5. $-16a^4 + 9b^2$

6. $-4x^6 + 3x^5 + 6x^3 - x^2 - 2x$

7. $6ax^2 - 2a + 15x^2y - 5y$

8. $2 + b - b^2$

9. $3y^2 + 7y - 6$

10. $x^{16} - 16y^4$

11. $8b^2x^4d^3 - 32b^3d^4x + 16byx$

12. $-2bxy + 6axy + 4ax^2 - 3by^2$

13. $x^2 - 8x + 15$

14. $-3x^2 + 7xy - 2y^2$

15. $t^2 - 1$

16. $-6p^3q^5 + 8p^2r^6 - 12p^5r^7 + 14r^3s^2 - 2s^3t^4$

17. $ax - bx + by + cy - cx - ay$

18. $2 - 3b + b^2$

19. $21g^2 - 8gf - 5f^2$

20. $4 - m^2$

21. $xy - x^2$

22. $a^2x + abx + 2ac + 3aby + 3b^2y + 2bc$

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

24. $3t^2 + 7t - 6$

25. $16ab^4 - 25b^2$

26. $6x - 4x^2$

27. $2a^2b^3y + 3ab^3x^2 - y + ab^3y - 3x^2 + 6a^2b^3x^2$

28. $x^2 - x - 42$

29. $35 - 38x + 8x^2$

30. $121 - 1.96y^6$

31. $4a^2 - a$

32. $12x^3 + 24x^2 - 5y^2 + 20xy^2 - 6x + 10x^2y^2$

33. $x^2 - xy - 72y^2$

34. $-4x^2 + 23xy - 15y^2$

35. $\frac{25x^2}{16} - 81y^2$

36. $2x^3 - 3x^2$

37. $12m^2 - 11m + 2$

38. $8xy^5 - 4m^2ny^3 - 3m^3n^2 + 6mnxy^2 - 3mn - 4y^3$

39. $k^2 - 11kl - 180l^2$

40. $1 - c^2$

41. $-6x^2 - 11x - 4$

42. $-2b^3 - 6b^2$

43. $c^2 - 27cd + 50d^2$

44. $-a^2 + 6ab - 8b^2$

45. $-x^4 + 25$

46. $7t^2 - 17tu + 6u^2$

47. $9wz^2 - 81z^4$

48. $7a^2c^2 - 21c - 9a^4c + 27a^2$

49. $6p^2 - 13pr + 2r^2$

50. $\frac{9n^2}{36} - 49p^2$

51. $6y^2 + 7yz - 3z^2$

52. $a^2 + a - 42$

53. $225 - 1.69w^2$

54. $35a^6b^5c + 42a^5b^4cd^2 - 28a^7b^3 - 21a^3b^4 + 14a^4b^3 - 7a^3b^2$

55. $3by^2 - 3b - c + 6bz^3 + cy^2 + 2cz^3$

56. $9 - x^2$

57. $9r^2 - 6r + 1$

58. $x^2 - 7x + 10$

59. $2a^2 + a$

60. $2q^2 - 5qr + 2r^2$

Answers - Worksheet #7

1. $7cy\left(2a^4y^5c - yd^3 + 3a^2c^5e - 1\right)$
2. $(ab-c)(c-d+e)$
3. $(x-7)(x+2)$
4. $(a-2b)(3a-2b)$
5. $(3b-4a^2)(3b+4a^2)$
6. $x\left(-4x^5+3x^4+6x^2-x-2\right)$ or $-x\left(4x^5-3x^4-6x^2+x+2\right)$
7. $(3x^2-1)(2a+5y)$
8. $(b+1)(-b+2)$
9. $(3y-2)(y+3)$
10. $(x^8-4y^2)(x^8+4y^2)$
11. $8bx\left(bx^3d^3-4b^2d^4+2y\right)$
12. $(-by+2ax)(2x+3y)$
13. $(x-3)(x-5)$
14. $(-3x+y)(x-2y)$
15. $(t+1)(t-1)$
16. $2\left(-3p^3q^5+4p^2r^6-6p^5r^7+7r^3s^2-s^3t^4\right)$
17. $(x-y)(a-b-c)$
18. $(b-2)(b-1)$
19. $(3g+f)(7g-5f)$
20. $(2+m)(2-m)$
21. $x(y-x)$
22. $(ax+2c+3by)(a+b)$
23. $(x+4)(x+5)$
24. $(t+3)(3t-2)$
25. $b^2(16ab^2-25)$
26. $2x(3-2x)$
27. $(2a^2b^3+ab^3-1)(y+3x^2)$
28. $(x-7)(x+6)$

Answers - WKS #7 cont'

29. $(4x-5)(2x-7)$
30. $(11+1.4y^3)(11-1.4y^3)$
31. $a(4a-1)$
32. $(4x+2x^2-1)(5y^2+6x)$
33. $(x-9y)(x+8y)$
34. $(-4x+3y)(x-5y)$
35. $\left(\frac{5x}{4}-9y\right)\left(\frac{5x}{4}+9y\right)$
36. $x^2(2x-3)$
37. $(3m-2)(4m-1)$
38. $(2xy^2-1-m^2n)(3mn+4y^3)$
39. $(K+9l)(K-20l)$
40. $(1-c)(1+c)$
41. $(-3x-4)(2x+1)$
42. $-2b^2(b+3)$ OR $2b^2(-b-3)$
43. $(c-2d)(c-25d)$
44. $(-a+4b)(a-2b)$
45. $(5-x^2)(5+x^2)$
46. $(7t-3v)(t-2v)$
47. $9z^2(w-9z^2)$
48. $(7c-9a^2)(a^2c-3)$
49. $(6p-r)(p-2r)$
50. $\left(\frac{n}{2}+7p\right)\left(\frac{n}{2}-7p\right)$ → NB. $\frac{3n}{6}$ reduces to $\frac{1}{2}n$ or $\frac{n}{2}$
51. $(3y-z)(2y+3z)$
52. $(a+7)(a-6)$
53. $(15-1.3w)(15+1.3w)$
54. $7a^3b^2(5a^3b^3c+6a^2b^2cd^2-4a^4b-3b^2+2ab-1)$
55. $(2z^3+y^2-1)(c+3b)$
56. $(3-x)(3+x)$
57. $(3r-1)^2$
58. $(x-2)(x-5)$
59. $a(2a+1)$
60. $(2q-r)(q-2r)$