

MTH-4106 Factoring and Algebraic Fractions: **Worksheet #8**Factor the following polynomials **completely**:

e.g. 1  $3x^2 + 6x - 9$

e.g. 2  $3x^3 - 9x^2 - 12x$

e.g. 3  $2p^2 - 4pq - 48q^2$

e.g. 4  $8y^4 - 2y^3z - 6y^2z^2$

e.g. 5  $27ax^2 - 48ay^2$

e.g. 6  $16a^4 - 81b^4$

e.g. 7  $2abc^2 + 6abc - 8abc - 24ab$

Now you do:

1.  $3ax - 3ax^3$

2.  $6x^3y - 72x^2 - 18x^2y + 24x^3$

3.  $-4x^2y^4 + 2x^3y^3 + 12x^4y^2$

4.  $24x^2 + 12x + 8xy + 4y$

5.  $3d^2e^6 - 48d^2f^8$

6.  $12a^4 + 32a^3 - 12a^2$

7.  $45x^4y^3 - 39x^3y^4 + 6x^2y^5$

8.  $16x^4y^2 - 68x^3y^3 + 16x^2y^4$

9.  $9a^2 - 36y^4$

10.  $4 - 4b^2$

11.  $2y^3 + 6y + 2y^2 + 6$

12.  $6b^2 - 21b - 45$

13.  $3x^2 + 6xy + 3y^2$

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

15.  $5x^2 + 35xy + 30y^2$

16.  $50 - 2a^2$

17.  $5x^2 + 30x - 35$

18.  $3x^5y^3 + x^4y^4 - 2x^3y^5$

19.  $b^2y^2 - 4b^2$

20.  $27a^2b^2 - 12a^4$

21.  $-3x^3y + 10x^2y^2 - 3xy^3$

22.  $4m^3 - 9m^2 + 2m$

23.  $-3x^3 - 8x^2 + 3x$

24.  $12x^2 + 4xy + 6x + 2y$

25.  $2p^5q^2 - p^4q^3 - p^3q^4$

26.  $4a^4b + a^3b^2 - 3a^2b^3$

27.  $3x^8z^3 - 75y^6z^3$

28.  $18m^8n^2 - 2p^2n^2$

29.  $-18a^2x^3 + 15a^2x^2y - 3a^2xy^2$

30.  $3a^2 - 9ab + 6b^2$

31.  $32 - 2c^2$

32.  $-2g^4h + 20g^3h^2 - 48g^2h^3$

33.  $7x^4 - 28$

34.  $12x^3 + 144x + 84x^2$

35.  $10rs - 5rt + 20s^2 - 10st$

36.  $c^3 - 36a^4b^2c$

37.  $2a^4 - 20a^3b + 50a^2b^2$

38.  $-a^5 + 13a^4 - 42a^3$

39.  $3 - 3t^2$

40.  $2uvx - 4uvy - 4ux + 8uy$

## Answers to Worksheet # 8

1.  $3ax(1-x)(1+x)$

2.  $6x^2(y+4)(x-3)$

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

4.  $4(3x+y)(2x+1)$

5.  $3d^2(e^3-4f^4)(e^3+4f^4)$

6.  $4a^2(3a-1)(a+3)$

7.  $3x^2y^3(3x-2y)(5x-y)$

8.  $4x^2y^2(4x-y)(x-4y)$

9.  $9(a-2y^2)(a+2y^2)$

10.  $4(1-b)(1+b)$

11.  $2(y^2+3)(y+1)$

12.  $3(b-5)(2b+3)$

13.  $3(x+y)^2$

14.  $5(x+y)(x-y)$

15.  $5(x+6y)(x+y)$

16.  $2(5-a)(5+a)$

17.  $5(x+7)(x-1)$

18.  $x^3y^3(3x-2y)(x+y)$

19.  $b^2(y-2)(y+2)$

20.  $3a^2(3b+2a)(3b-2a)$

21.  $xy(-3x+y)(x-3y)$

22.  $m(4m-1)(m-2)$

23.  $x(-3x+1)(x+3)$

24.  $2(3x+y)(1+2x)$

25.  $p^3q^2(2p+q)(p-q)$

26.  $a^2b(4a-3b)(a+b)$

27.  $3z^3(x^4-5y^3)(x^4+5y^3)$

28.  $2n^2(3m^4-p)(3m^4+p)$

29.  $3a^2x(-2x+y)(3x-y)$

30.  $3(a-2b)(a-b)$

31.  $2(4-c)(4+c)$

32.  $2g^2h(-g+6h)(g-4h)$

33.  $7(x^2-2)(x^2+2)$

34.  $12(x+3)(x+4)$

35.  $5(r+2s)(2s-t)$

36.  $c(c-6a^2b)(c+6a^2b)$

37.  $2a^2(a-5b)(a-5b)$

38.  $a^3(-a+7)(a-6)$

39.  $3(1-t)(1+t)$

40.  $2u(v-2)(x-2y)$