

MTH-4106 Factoring and Algebraic Fractions: **Worksheet #9**

Reduce the following algebraic fractions to their lowest terms.
Show all the steps in the solutions.

1.
$$\frac{h^2 - h^2k^2}{h^3 - h^3k^2}$$

2.
$$\frac{4x^2 - 26x + 40}{-2x^2 + 13x - 20}$$

3.
$$\frac{ab - bc}{-b}$$

$$4. \frac{x^2 - 8xy + 7y^2}{x^2 - 3xy - 28y^2}$$

$$5. \frac{4-j}{j^2-16}$$

$$6. \frac{xy + 5y^2}{x^2 + 6xy + 5y^2}$$

$$7. \frac{4x^2 - 8xy - 12y^2}{3y - x}$$

$$8. \frac{2x^2 - 2y^2}{2x^2 - xy - y^2}$$

$$9. \frac{21m - 3n}{n^2 - 49m^2}$$

$$10. \frac{x^2 + 2xy + y^2}{x^4 - y^4}$$

$$11. \frac{2d - 6}{2d^2 - 7d + 6}$$

$$12. \frac{3x^2 + 10x + 8}{2x^2 + 9x + 10}$$

$$13. \frac{6x^2 - 8xy}{9xy - 12y^2}$$

$$14. \frac{15x^2 + xy - 2y^2}{9x^2 + 3xy - 2y^2}$$

$$15. \frac{15a^2b^3}{-3a^3b}$$

$$16. \frac{b^2 + b}{b^3 + 2b^2 + b}$$

$$17. \frac{2m + 2n}{(m + n)^2}$$

$$18. \frac{5b^2 - b^3}{-5 + b + bc - 5c}$$

$$19. \frac{c^2 - 4d^2}{2d + c}$$

$$20. \frac{5x^3 + 20x^2}{3x^4 + 12x^3}$$

$$21. \frac{(2j+6)^2}{4j^2 - 36}$$

$$22. \frac{2y^2 + y - 3}{2y^2 - 5y - 12}$$

$$23. \frac{3p - 9}{3p^2 + 6p - 9}$$

$$24. \frac{3m^2 - 27}{6m + 18}$$

$$25. \frac{2v-3}{2v^2+v-6}$$

$$26. \frac{ay^2+3a^2y+2a^3}{ay^2-a^3}$$

$$27. \frac{z+2}{z^2+4z+4}$$

$$28. \frac{4b^2 - 25}{2b - 5}$$

$$29. \frac{g - 5}{5 - g}$$

$$30. \frac{10x^2 - 9x - 1}{x^2 + 2x - 3}$$

$$31. \frac{2xy + 3xz}{-x}$$

$$32. \frac{6a^2 - 14a + 4}{3a^2 + 11a - 4}$$

$$33. \frac{8k - h}{h^2 - 64k^2}$$

$$34. \frac{x^2 - 6x + 5}{50 - 2x^2}$$

$$35. \frac{2q^2 + 17qr + 21r^2}{3q^2 + 26qr + 35r^2}$$

$$36. \frac{4x^2 - y^4}{3x^2y^2 - 6x^3}$$

$$37. \frac{5u - u^2}{3u^3 - 9u^2 - 30u}$$

$$38. \frac{-2x^2y - 2xy + 4y}{x^2 - 1}$$

$$39. \frac{-s^2 + 7st - 12t^2}{s^2 - 5st + 6t^2}$$

$$40. \frac{-b^2 - 5b - 6}{9 - b^2}$$

$$41. \frac{4t^2 - 36t + 80}{(4t - t^2)(5 - t)}$$

$$42. \frac{9 - m^2}{-m^2 + m + 6}$$

$$43. \frac{2y^2 - 4yz + 2z^2}{10x^2y - 10yz^2}$$

$$44. \frac{-x^2 + 5x - 6}{4 - x^2}$$

$$45. \frac{2a^2 - 11a + 12}{-2a^2 - a + 6}$$

$$46. \frac{-8x^2 + 38x - 24}{-2x^2 + 32}$$

$$47. \frac{3a^2 - 13a + 14}{-3a^2 + a + 14}$$

$$48. \frac{-x^2 + 6x - 8}{4 - x^2}$$

$$49. \frac{-2a^2 + 13a - 15}{15a - 10a^2}$$

$$50. \frac{9k^2 - 3k^3}{k^2 + 3km - 3k - 9m}$$

$$51. \frac{3x^3 - 3xy^2}{-x^2 + xy}$$

Answers to Worksheet #9

1. $\frac{1}{h}$
2. -2
3. $-(a-c)$ or $-a+c$ or $c-a$
4. $\frac{x-y}{x+4y}$
5. $\frac{-1}{j+4}$
6. $\frac{y}{x+y}$
7. $-4(x+y)$
8. $\frac{2(x+y)}{2x+y}$
9. $\frac{-3}{n+7m}$
10. $\frac{x+y}{(x-y)(x^2+y^2)}$
11. $\frac{2(d-3)}{(2d-3)(d-2)}$
12. $\frac{3x+4}{2x+5}$
13. $\frac{2x}{3y}$
14. $\frac{5x+2y}{3x+2y}$
15. $\frac{-5b^2}{a}$
16. $\frac{1}{b+1}$
17. $\frac{2}{m+n}$
18. $\frac{-b^2}{1+c}$
19. $c-2d$
20. $\frac{5}{3x}$
21. $\frac{j+3}{j-3}$
22. $\frac{y-1}{y-4}$
23. $\frac{p-3}{(p+3)(p-1)}$
24. $\frac{m-3}{2}$
25. $\frac{1}{v+2}$
26. $\frac{y+2a}{y-a}$
27. $\frac{1}{z+2}$
28. $2b+5$
29. -1
30. $\frac{10x+1}{x+3}$
31. $-(2y+3z)$
32. $\frac{2(a-2)}{a+4}$
33. $\frac{-1}{h+8k}$
34. $\frac{-(x-1)}{2(5+x)}$
35. $\frac{2q+3r}{3q+5r}$
36. $\frac{-(2x+y^2)}{3x^2}$
37. $\frac{-1}{3(u+2)}$
38. $\frac{-2y(x+2)}{(x+1)}$
39. $\frac{-(s-4t)}{s-2t}$
40. $\frac{-b-2}{3-b}$ or $\frac{-(b+2)}{3-b}$
41. $\frac{4}{t}$
42. $\frac{3+m}{m+2}$
43. $\frac{(y-z)^2}{5y(x-z)(x+z)}$
44. $\frac{x-3}{2+x}$
45. $\frac{4-a}{a+2}$
46. $\frac{4x-3}{4+x}$
47. $\frac{2-a}{a+2}$
48. $\frac{x-4}{2+x}$
49. $\frac{a-5}{5a}$
50. $\frac{-3k^2}{k+3m}$
51. $-3(x+y)$