Simplifying Rational Expressions

Reduce each of the following to lowest terms:

1. $\frac{3x^3y}{x^2y^2}=\frac{3x}{y}$

2. $\frac{4xy^2}{2x^3y^3}=\frac{2}{xy}$

3. $\frac{x(x+2)}{x(x-2)}=\frac{(x+2)}{(x-2)}$

4. $\frac{(x-1)(x+2)}{(2+x)}=(x-1)$

5. $\frac{x^2+x}{x+1}=\frac{x(x+1)}{(x+1)}=x$

6. $\frac{x-1}{1-x}=\frac{-1(1-x)}{(1-x)}=-1$

7. $\frac{3x^2}{6x^2-9x}=\frac{3x^2}{3x(2x-3)}=\frac{x}{(2x-3)}$

8. $\frac{4x^2-2x^2}{2x^2}=\frac{2x^2}{2x^2}=1$

9. $\frac{t^2+2t}{t^2+t-2}=\frac{t(t+2)}{(t+2)(t-1)}=\frac{t}{(t-1)}$

10. $\frac{x^3-4x}{x^3-4x^2+4x}=\frac{x(x-2)(x+2)}{x(x-2)(x-2)}=\frac{(x+2)}{(x-2)}$

11. $\frac{a-x}{x-a}=\frac{-1(x-a)}{(x-a)}=-1$

12. $\frac{t^2-at}{t^2}=\frac{t(t-a)}{t^2}=\frac{(t-a)}{t}$

13. $\frac{a^2-t^2}{(a-t)^2}=\frac{(a-t)(a+t)}{(a-t)^2}=\frac{(a+t)}{(a-t)}$

14. $\frac{(x+y)^2}{x^2-y^2}=\frac{(x+y)^2}{(x-y)(x+y)}=\frac{(x+y)}{(x-y)}$

15. $\frac{x^2+x-6}{(x-3)(x-2)}=\frac{(x+3)(x-2)}{(x-3)(x-2)}=\frac{(x+3)}{(x-3)}$

16. $\frac{2x^2-5x+2}{2x^2-3x-2}=\frac{(2x-1)(x-2)}{(2x+1)(x-2)}=\frac{(2x-1)}{(2x+1)}$

17. $\frac{4t^2+3t-1}{4t^2-5t+1}=\frac{(4t-1)(t+1)}{(4t-1)(t-1)}=\frac{(t+1)}{(t-1)}$

18. $\frac{x^2+4x-5}{x-1}=\frac{(x+5)(x-1)}{(x-1)}=(x+5)$

19. $\frac{(x-1)(x+1)^2}{(x+1)(x-1)^2}=\frac{(x+1)}{(x-1)}$

20. $\frac{x^4-x^2}{x^4-1}=\frac{x^2(x-1)(x+1)}{(x^2+1)(x-1)(x+1)}=\frac{x^2}{(x^2+1)}$

21. $\frac{x^4-y^4}{(x+y)^2(x^2+y^2)}=\frac{(x^2+y^2)(x-y)(x+y)}{(x+y)^2(x^2+y^2)}=\frac{(x-y)}{(x+y)}$

22. $\frac{4x^2+2x-2}{4x^2-1}=\frac{2(2x-1)(x+1)}{(2x-1)(2x+1)}=\frac{2(x+1)}{(2x+1)}$

23. $\frac{3x^2-x-2}{6x^2+x-2}=\frac{(3x+2)(x-1)}{(3x+2)(2x-1)}=\frac{(x-1)}{(2x-1)}$

24. $\frac{x^2-x-20}{x^2-25}=\frac{(x-5)(x+4)}{(x-5)(x+5)}=\frac{(x+4)}{(x+5)}$