Math Fact or Fiction?

State whether the statement is true or false.

1. $(xy)^n = x^n y^n$
2. $(2x)^2 = 2x^2$
3. $2(x)^n = (2x)^n$
4. $\frac{1}{x^{-n}} = x^n$
5. $\frac{a}{ax} = x$
6. $\frac{ab+ac}{a} = b + c$
7. $\frac{a}{ab+ac} = \frac{1}{b+c}$
8. $\frac{4x+3y}{w} = \frac{4x}{w} + \frac{3y}{w}$
9. $\frac{w}{4x+3y} = \frac{w}{4x} + \frac{w}{3y}$
10. $\frac{ab+c+d}{aw} = \frac{b+c+d}{w}$
11. $\frac{\log a}{\log b} = \log a - \log b$
12. $\log(a - b) = \frac{\log a}{\log b}$
13. $\log(a + b) = \log a \log b$
14. $\log ab = \log a + \log b$
15. $\frac{\ln a}{\ln b} = \frac{a}{b}$
16. $If\ \ln a = \ln b, then\ a = b.$
17. $x \log a^w = \log a^{xw}$
18. $-2^4 = 16$
19. $-x^2 = x^2$
20. $\frac{\frac{a}{b}}{c} = \frac{ac}{b}$
21. $\frac{a}{\frac{b}{c}} = \frac{ab}{c}$
22. $\frac{\sqrt{xy}}{x} = \sqrt{y}$
23. $\sqrt{x^2 + y^2} = x + y$
24. $\frac{1}{\sqrt{x}+\sqrt{y}} = \sqrt{x} + \sqrt{y}$
25. $\frac{1}{0}$=0
26. $x^0 = 1$
27. $\frac{a}{b} + \frac{c}{d} = \frac{a+c}{b+d}$
28. $\frac{a}{b} \cdot \frac{c}{d} = \frac{ad}{bc}$
29. $\frac{a}{b} \cdot \frac{c}{d} = \frac{bc}{ad}$
30. $a(x + y)^n = (ax + ay)^n$
31. $\frac{x+2}{x+5} = \frac{2}{5}$
32. $3x + 3x = 6x^2$
33. $1^{-1} = -1$
34. $a^2 + b^2 = (a + b)(a - b)$
35. $(a + b)^2 = a^2 + b^2$
36. $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$