Name _____

Algebraic Atrocities

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Statement	Correction
1. $\frac{3}{a}+\frac{3}{b}=\frac{3}{a+b}$	$\frac{3}{a}+\frac{3}{b}=\frac{3a+3b}{ab}$
2. $\frac{a+b}{c+d}=\frac{a}{c}+\frac{b}{d}$	$\frac{a+b}{c+d}=\frac{a}{c+d}+\frac{b}{c+d}$
3. $\frac{a+b}{c}=\frac{a}{c}+\frac{b}{c}$	TRUE
4. $\frac{a}{b+c}=\frac{a}{b}+\frac{a}{c}$	$\frac{a}{b+c}=\frac{a}{b+c}$ (cannot split up)
5. $\frac{10t+u}{10u+v}=\frac{t}{v}$	$\frac{10t+u}{10u+v}=\frac{10t+u}{10u+v}$ (cannot simplify)
6. $\frac{a}{b}=\frac{a^2}{b^2}$	$\frac{a}{b}=\frac{a}{b}$ (cannot square)
7. $\frac{a+b}{b}=a$	$\frac{a+b}{b}=\frac{a}{b}+1$ (cannot divide with +)
8. $\frac{1}{a+b}+(a+b)^2=a+b$	$\frac{1}{a+b}\times(a+b)^2=a+b$
9. $2a^{-1}=\frac{-1}{2a}$	$2a^{-1}=\frac{2}{a}$
10. $a^{-2}=-a^2$	$a^{-2}=\frac{1}{a^2}$
11. $(a-b)^2=a^2-b^2$	$(a-b)^2=a^2-2ab+b^2$
12. $(a+b)^2=a^2+b^2$	$(a+b)^2=a^2+2ab+b^2$

13. $(a+b)^3 = a^3 + b^3$ $\qquad$ $(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$

14. $\sqrt{a^2} = a$ $\qquad$ $\sqrt{a^2} = |a|$ ($\sqrt{\ }$ is only positive root)

15. $\sqrt{a^2 + b^2} = a + b$ $\qquad$ $\sqrt{a^2 + b^2} = \sqrt{a^2 + b^2}$ (cannot be simplified)

16. $\sqrt{a^2 - b^2} = a - b$ $\qquad$ $\sqrt{a^2 - b^2} = \sqrt{a^2 - b^2}$ (cannot be simplified)

17. $\sqrt{a+b} = \sqrt{a} + \sqrt{b}$ $\qquad$ $\sqrt{a+b} = \sqrt{a+b}$ (cannot be simplified)

18. $\frac{1}{3}(-6)^3 = -2^3$ $\qquad$ $\frac{1}{3}(-6)^3 = -72$

19. $a^{\frac{2}{3}} = \frac{a^2}{a^3}$ $\qquad$ $a^{\frac{2}{3}} = \sqrt[3]{a^2}$

20. $\frac{\sin a}{a} = \sin(1)$ $\qquad$ $\frac{\sin a}{a} = \frac{\sin a}{a}$ $\qquad$ but $\lim_{a \to 0}\left(\frac{\sin a}{a}\right) = 1$

21. $\frac{\sin 2a}{a} = \sin(2)$ $\qquad$ $\frac{\sin 2a}{a} = \frac{\sin 2a}{a}$ $\qquad$ or $\qquad$ $\frac{2\sin a \cos a}{a}$

22. $\sin(2A) = 2\sin(A)$ $\qquad$ $\sin(2A) = 2\sin(A)\cos(A)$

23. $\sin(A+B) = \sin(A) + \sin(B)$ $\qquad$ $\sin(A+B) = \sin(A)\cos(B) + \cos(A)\sin(B)$

24. $\cos(2A) = 2\cos(A)$ $\qquad$ $\cos(2A) = \cos^2(A) - \sin^2(A)$

25. $\cos(A+B) = \cos(A) + \cos(B)$ $\qquad$ $\cos(A+B) = \cos(A)\cos(B) - \sin(A)\sin(B)$

26. $\log(a+b) = \log(a) + \log(b)$ $\qquad$ $\log(a \times b) = \log(a) + \log(b)$

27. If $a+b=0$, then either $a=0$ or $b=0$ $\qquad$ If $a+b=0$, then $a=-b$

28. If x(x-2)=24, then either $x=24$ or $x-2=24$ $\qquad$ NO! Only works if set = 0

29. $a\,(bc) = (ab)\,(ac)$ $\qquad$ $a\,(bc) = (ab)\,(c)$ (not distributive)

30. If $\log(a) = b$, then $a = \frac{b}{\log}$ $\qquad$ If $\log(a) = b$, then $a = 10^b$

31. If $\sin(a)=b$, then $a=\dfrac{b}{\sin}$ If $\sin(a)=b$, then $a=Sin^{-1}(b)$

32. If $\cos(a)=b$, then $a=\dfrac{b}{\cos}$ If $\cos(a)=b$, then $a=Cos^{-1}(b)$

33. If $\tan(a)=b$, then $a=\dfrac{b}{\tan}$ If $\tan(a)=b$, then $a=Tan^{-1}(b)$

34. $Sin^{-1}(x)=\dfrac{1}{\csc(x)}$ $Sin^{-1}(x)=Csc^{-1}\left(\dfrac{1}{x}\right)$ or $\sin(x)=\dfrac{1}{\csc(x)}$

35. $Tan^{-1}(x)=\dfrac{1}{\cot(x)}$ $Tan^{-1}(x)=Cot^{-1}\left(\dfrac{1}{x}\right)$ or $\tan(x)=\dfrac{1}{\cot(x)}$

36. $Cos^{-1}(x)=\dfrac{1}{\sec(x)}$ $Cos^{-1}(x)=Sec^{-1}\left(\dfrac{1}{x}\right)$ or $\cos(x)=\dfrac{1}{\sec(x)}$

37. $Sin^{-1}(x)=\dfrac{1}{\sin(x)}$ $Sin^{-1}(x)$ means Arcsin(x) but $\left(sin(x)\right)^{-1}=\dfrac{1}{\sin(x)}$