

The Thirteen Deadly Sins of Algebra

The following algebraic statements are all *FALSE*!

Are *you* guilty of any of them?

$$(1) \qquad \sqrt{a+b} = \sqrt{a} + \sqrt{b}$$

$$(2) \qquad \frac{1}{a+b} = \frac{1}{a} + \frac{1}{b}$$

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

$$(4) \qquad a - (b+c) = a - b + c$$

$$(5) \qquad \frac{a}{b} + \frac{c}{d} = \frac{a+c}{b+d}$$

$$(6) \qquad \frac{a+c^{-2}}{b} = \frac{a}{b+c^2}$$

$$(7) \qquad \frac{ab+c}{ad} = \frac{b+c}{d}$$

$$(8) \qquad a^{b+c} = a^b + a^c$$

$$(9) \qquad \log(a+b) = \log a + \log b$$

$$(10) \qquad \log(ab) = \log a \cdot \log b$$

$$(11) \qquad \frac{\log a}{\log b} = \log a - \log b$$

$$(12) \qquad \sin(a+b) = \sin a + \sin b$$

$$(13) \qquad \sin 2a = 2 \sin a$$