1011-08-316 **Walter Taylor*** (walter.taylor@colorado.edu), Mathematics Department, University of Colorado, Boulder, CO 80309-0395. *Approximate satisfaction of identities (continued).* Preliminary report.

If $\mathbf{A}$ is an algebra on a metric space $\langle A, d\rangle$ and if $\sigma \approx \tau$ is an equation of the appropriate type, then $\lambda_{\mathbf{A}}(\sigma, \tau)$ denotes the sup of $d(\sigma^{\mathbf{A}}(\mathbf{a}), \tau^{\mathbf{A}}(\mathbf{a}))$, with $\mathbf{a}$ in the appropriate power of A. Let $\lambda_{\mathbf{A}}(\Sigma)$ be the sup of $\lambda_{\mathbf{A}}(\sigma, \tau)$ over all $(\sigma \approx \tau) \in \Sigma$, and let $\lambda_A(\Sigma)$ be the inf of $\lambda_{\mathbf{A}}(\Sigma)$ over all topological algebras $\mathbf{A}$ (of the correct type) that are based on the space $\langle A, d\rangle$. If A is compatible with Σ, then $\lambda_A(\Sigma) = 0$, but the converse fails.

We shall mention some elementary results, examples and problems about $\lambda_A(\Sigma)$. In some cases, this quantity yields a conclusion sharper than non-compatibility: e.g., if A is $[0, 1]^2$ with the Euclidean metric, and Σ posits the existence of a one-one map $A^2 \to A$, then $\lambda_A(\Sigma) = 1/2\sqrt{2}$. We describe some attempts to base a useful topological invariant on λ. (Received August 30, 2005)