By Theorem 1 of M.H. §4, $\phi_1 \equiv \psi_1$, and $\phi_2 \equiv \psi_2$. It follows, then, from Theorem 14 of M.H. §1, that $\phi_1 \equiv \phi_2$.

THEOREM 4. *If ϕ_1 and ϕ_2 are two right angles in space, then $\phi_1 \equiv \phi_2$.*

PROOF. If ϕ_1 and ϕ_2 are in the same plane, $\phi_1 \equiv \phi_2$ by Theorem 1 of M.H. §4. If ϕ_1 and ϕ_2 are not in the same plane, they lie in intersecting planes or in non-intersecting planes. If they lie in intersecting planes, they are congruent to each other by Theorem 3. If ϕ_1 and ϕ_2 lie in the planes α_1 and α_2, respectively, and α_1 does not intersect α_2, there exists a plane α_3 which intersects both α_1 and α_2. There exists in α_3 a right angle ϕ_3. By Theorem 3, $\phi_1 \equiv \phi_3$ and $\phi_2 \equiv \phi_3$; hence, by Theorem 14 of M.H §1, we have $\phi_1 \equiv \phi_2$.

THE UNIVERSITY OF TEXAS

CERTAIN QUINARY FORMS RELATED TO THE SUM OF FIVE SQUARES*

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1. *Introduction.* The number of solutions in integers x, y, z of the equation $n = x^2 + y^2 + z^2$ is a function of the binary class number of n. For numerous forms $f = ax^2 + by^2 + cz^2$, the expression of the number of solutions of $f = n$ in terms of the class number is another way of showing that the number of representations of n by f is a function of the number of representations of various multiples of n as the sum of three squares.‡

Similarly, the number of solutions of the equation $n = x^2 + y^2 + z^2 + t^2$ in integers is the sum of the positive odd divisors of n, multiplied by 8 or 24, according as n is odd or even. There are various forms $f = ax^2 + by^2 + cz^2 + dt^2$ for which the number of representations of n by f is a multiple of the sum of the odd divisors of n. The number of representations of n by one of

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‡ See, for example, Kronecker, Journal für Mathematik, vol. 57 (1860), p. 253; J. V. Uspensky, American Journal of Mathematics, vol. 51 (1929), p. 51; B. W. Jones, American Mathematical Monthly, vol. 36 (1929), p. 73.