1052-11-37 **Roger C Baker*** (baker@math.byu.edu), Department of Mathematics, Brigham Young University, Provo, UT 84602. *Asymptotic formulas for ternary quadratic forms.* Preliminary report.

Let Q be an indefinite quadratic form in three variables with integer coefficients. How many solutions of Q(x)=m are present in a cube with side P tending to infinity? We usually make the assumption that P is of order of size square root of m, in the case where m tends to infinity. For the homogeneous case m = 0, this assumption is irrelevant. A search of the literature reveals a satisfactory answer only in the homogeneous case (Heath-Brown, 1996). What happens in the homogeneous case if we require all coordinates of x to be square-free? I report on this, and also on progress in the inhomogeneous case. (Received July 31, 2009)