HOMEWORK 17
CALCULUS III
DUE 03-27

(1) In class, we showed that the extreme values of $T(x, y, z) = 20 + 2x + 2y + z^2$ subject to the constraints $x^2 + y^2 + z^2 = 11$ and $x + y + z = 3$ can only occur when $y = x$ or $z = 1$.
   (a) Plug in $y = x$ to the constraints to get two equations in two unknowns.
   (b) Solve your equations from (a) to find some critical points.
   (c) Plug in $z = 1$ to the constraints to get two equations in two unknowns.
   (d) Solve your equations from (c) to find more critical points.
   (e) Using your lists of critical points from (b) and (d), find the extreme values of $T(x, y, z)$ subject to the two constraints. (You may check your answer against Example 13.10.5 in the text.)

- **Nine** book problems: #13.10.16, 17, 18, 28, 29, 38, 39, 47, 48.