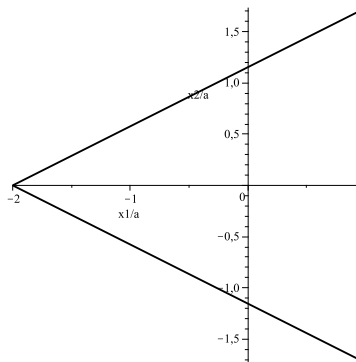Figure 1:

Figure 2: Cross section of bar

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Continuum Mechanics
Home assignment number 4, 2008
To be handed in Wednesday October 1

We consider torsion of a cylindrical bar with an equilateral triangular cross-section. $0 \leq x_3 \leq h$. Show that the function $\Phi = \alpha(3x_1^2 x_2 - x_2^3)$ satisfies the equilibrium equations. Calculate the stress vector on the lateral surfaces and find the value of α to satisfy the boundary conditions there. Also determine the stress vector distribution on the surface $x_3 = h$ and plot or sketch it.