Engineering Tripos Part IIA: Module 3C2
Manufacturing Engineering Tripos Part I: Paper P4B
Materials process modelling and failure analysis
Numerical solutions - 2005/6

1 (b) Plane stress $r_y = \frac{a}{2}\left(\frac{\sigma}{\sigma_y}\right)^2$, Plane strain $r_y = \frac{a}{2}\left(\frac{(1-2\upsilon)\sigma}{\sigma_y}\right)^2$

2 (b) $T(t) - T_o = C\frac{\bar{q}}{\lambda}\sqrt{a\,t}$

4 (c) Approximately 35 seconds.