4C16 2010 Answers

1. b) ii) $p = \frac{3U\eta}{h^3}\left(y^2 - L^2\right)\frac{\mathrm{d}h}{\mathrm{d}x}$

c) $x = -\sqrt{\frac{2h_0 R}{5}}$

d) $W = \frac{2U\eta L^3}{h_0^2}$

2. b) iii) $0 < \frac{\omega_a}{\omega_c} < \left(\frac{1}{R} + 1\right)$

3. a) $\omega = 1200\pi$ rad/s
$a_0 = 7200\pi$ m/s^2

b) 6.43 GPa

c) 23% reduction