#Jenny

Finally I get this ebook, thanks for all these I can get now!

#Rio

Cool! I'am really happy

#Markus Jensen

I did not think that this would work, my best friend showed me this website, and it does! I get my most wanted eBook

#Hun Tsu

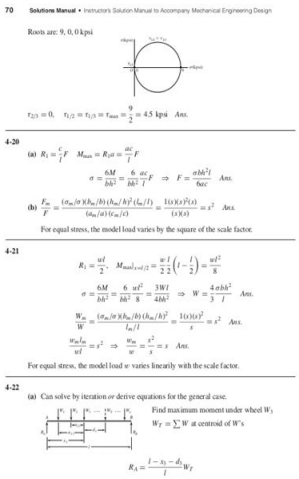
wtf this great ebook for free?!

#Che Salsa

My friends are so mad that they do not know how I have all the high quality ebook which they do not!

#Diego Butler

so many fake sites. this is the first one which worked! Many thanks



70 **Solutions Manual** • Instructor's Solution Manual to Accompany Mechanical Engineering Design

Roots are: 9, 0, 0 kpsi

$\tau_{2/3} = 0, \quad \tau_{1/2} = \tau_{1/3} = \tau_{\max} = \frac{9}{2} = 4.5 \text{ kpsi} \quad Ans.$

4-20

(a) $R_1 = \frac{c}{l}F \quad M_{\max} = R_1 a = \frac{ac}{l}F$

$\sigma = \frac{6M}{bh^2} = \frac{6}{bh^2}\frac{ac}{l}F \Rightarrow F = \frac{\sigma bh^2 l}{6ac} \quad Ans.$

(b) $\frac{F_m}{F} = \frac{(\sigma_m/\sigma)(b_m/b)(h_m/h)^2(l_m/l)}{(a_m/a)(c_m/c)} = \frac{1(1)(s)^2(1)}{(1)(1)} = s^2 \quad Ans.$

For equal stress, the model load varies by the square of the scale factor.

4-21

$R_1 = \frac{wl}{2}, \quad M_{\max|x=l/2} = \frac{w}{2}\frac{l}{2}\left(l - \frac{l}{2}\right) = \frac{wl^2}{8}$

$\sigma = \frac{6M}{bh^2} = \frac{6}{bh^2}\frac{wl^2}{8} = \frac{3Wl}{4bh^2} \Rightarrow W = \frac{4}{3}\frac{\sigma bh^2}{l} \quad Ans.$

$\frac{W_m}{W} = \frac{(\sigma_m/\sigma)(b_m/b)(h_m/h)^2}{l_m/l} = \frac{1(1)(s)^2}{s} = s^2 \quad Ans.$

$\frac{w_m l_m}{wl} = s^2 \Rightarrow \frac{w_m}{w} = \frac{s^2}{s} = s \quad Ans.$

For equal stress, the model load w varies linearly with the scale factor.

4-22

(a) Can solve by iteration *or* derive equations for the general case.

Find maximum moment under wheel W_3

$W_T = \sum W$ at centroid of W's

$R_A = \frac{l - x_3 - d_3}{l} W_T$

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