

Tutorial 7 1. To the state of the state	DNYANESH PAWASKAR
T ₁ T ₂ T ₃ T(x) = $\frac{1}{h} \left(T_1 \left(x + \frac{h}{2} \right) - T_2 \left(x - \frac{h}{2} \right) \right)$ $\sigma(z,x) = \left(-x u''(z) - d T(x) \right) E$ $0 = M(z) = -\int \sigma x dx dy$ T_{given} $u'' = \int x^2 dx dy + dE \int T(x) x dx dy = 0$ $u'' = \frac{h}{h}^3 + dE \frac{hh^2}{h^2} \left(T_1 - T_2 \right) = 0$ $u'' = \frac{d}{h} \left(T_2 - T_1 \right)$ $u = \frac{d}{h} \left(T_2 - T_1 \right)$ $u = \frac{d}{h} \left(T_2 - T_1 \right)$	17 71:17
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$ \tau(z,x) = (-xu''(z) - dT(x)) E $ $ 0 = M(z) = -\int \sigma x dx dy $ $ -\int \sigma x dx dy $ $ u'' E \int x^{2} dx dy + dE \int T(x) x dx dy = 0 $ $ -D D D $ $ u'' E \int h^{3} + dE \int h^{2} (T_{1} - T_{2}) = 0 $ $ u'' = d (T_{2} - T_{1}) $ $ u = d (T_{2} - T_{1}) $ $ u = d (T_{2} - T_{1}) $	/// 2 //// D
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$L = \int_{a}^{b} \frac{1}{a^{2}} dx dy + dE \int_{a}^{b} \frac{1}{a^{2}} dx dy = 0$ $U^{\dagger} = \int_{12}^{b} \frac{bh^{3}}{h^{2}} dx dy + dE \int_{12}^{b} \frac{1}{a^{2}} dx dy = 0$ $U^{\dagger} = \int_{12}^{b} \frac{bh^{2}}{h^{2}} (T_{1} - T_{2}) = 0$ $U^{\dagger} = \int_{12}^{b} (T_{2} - T_{1}) dx dx dy = 0$ $U^{\dagger} = \int_{12}^{b} (T_{1} - T_{2}) dx dx dy = 0$ $U^{\dagger} = \int_{12}^{b} (T_{1} - T_{2}) dx dx dy = 0$ $U^{\dagger} = \int_{12}^{b} (T_{1} - T_{2}) dx dx dy = 0$ $U^{\dagger} = \int_{12}^{b} (T_{1} - T_{2}) dx dx dy = 0$ $U^{\dagger} = \int_{12}^{b} (T_{1} - T_{2}) dx dx dy = 0$ $U^{\dagger} = \int_{12}^{b} (T_{1} - T_{2}) dx dx dy = 0$ $U^{\dagger} = \int_{12}^{b} (T_{2} - T_{1}) dx dx dx dy = 0$ $U^{\dagger} = \int_{12}^{b} (T_{2} - T_{1}) dx $	$0 = M(z) = - \left(\sigma x dx dy \right)$
$u'' \in \int_{12}^{2} x^{2} dx dy + dE \int_{12}^{2} T(x) x dx dy = 0$ $u'' \in \int_{12}^{2} \frac{bh^{3}}{h^{2}} + dE \int_{12}^{2} (T_{1} - T_{2}) = 0$ $u'' = d (T_{2} - T_{1})$	1 civen
$u'' = \frac{bh^{3}}{12} + d = \frac{bh^{2}}{12} (T_{1} - T_{2}) = 0$ $u'' = d (T_{2} - T_{1})$ h $u = \frac{d}{h} (T_{2} - T_{1}) = 0$ $u'' = \frac{d}{h} (T_{2} - T_{1}) = 0$	
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$u^{1} = \frac{bh^{3}}{12} + d = \frac{bh^{2}}{12} (T_{1} - T_{2}) = 0$ $u^{1} = d (T_{2} - T_{1})$ $u = d (T_{2} - T_{1}) = 0$ $u = d (T_{2} - T_{1}) = 0$	<u>v</u>
$u'' = \frac{d}{h} \left(T_2 - T_1 \right)$ $u = \frac{d}{h} \left(T_2 - T_1 \right) \frac{z^2}{z^2} + C_1 z + C_0$	
$u'' = \frac{d}{h} (T_2 - T_1)$ $u = \frac{d}{h} (T_2 - T_1) \frac{z^2}{z^2} + C_1 z + C_0$	$u^{1} = bh^{3} + d = bh^{2} (T_{1} - T_{2}) = 0$
$u = d(T_2 - T_1) z^2 + c_1 z + c_0$	
$u = d(T_2 - T_1) z^2 + c_1 z + c_0$	
h ×	$u'' = \frac{d}{d} \left(\frac{T_2 - T_1}{T_2} \right)$
h ×	<u> </u>
h ×	$u = d(T_1 - T_1) - \frac{2}{3} \cdot C - \frac{1}{3} + C$
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	DNYANESH PAWASKAR
	B(s u(o) =0, u(L) = 0
	$u = \frac{d}{h} \left(T_2 - T_1 \right) \left(\frac{z^2 - L^2}{2} \right)$
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To closes the gap g

$$\frac{dT_0L^2-g}{h}=\frac{gh}{dL^2}$$

Incremental/Stepwise Approach

$$S = \frac{9}{(1 + \frac{kL^3}{3EI})}$$

Single Shot / Full Application of 2To

$$\frac{d(2T_0)L^2 - FL^3}{h} = 9+S, S = F$$

$$\frac{dT_0L^2}{h} + \frac{dT_0L^2}{h} - \frac{kSL^3}{3EI} = g+S$$

$$S = 9$$

$$\frac{\left(1 + \frac{kL^3}{3EI}\right)}{3EI}$$



Ь 4 T_b want T(r) Ta Thermal BCs $T(a) = T_a$, $T(b) = T_b$ Realistic - KdT $= h(T(b) - T_{\infty})$ BC Newton cooling convective heat transfer coeff. Steady state $T = c_1 \ln r + c_2$ HW Solve for C1, C2 www.PrintablePaper.net

DNVA	NFSH	PAMA	SKAR

5.
$$u = u_r$$
 Plane stress

$$\frac{\epsilon_{tr} = \frac{du}{dr} = \frac{1}{E} \left(\tau_{tr} - \nu \tau_{\theta\theta} \right) + \alpha T(r)}{E}$$

$$\frac{\epsilon_{\theta\theta} = u}{r} = \frac{1}{E} \left(\sigma_{\theta\theta} - \nu \sigma_{rr} \right) + dT(r)$$

$$\epsilon_{ro} = 0$$

harmonic spring anharmonic spring

$$\frac{T_{\text{nvert}}}{\sigma_{\text{tr}} = \frac{E}{|-\nu|^2} \left(\epsilon_{\text{tr}} + \nu \epsilon_{\text{00}} \right) - \frac{E \, dT}{|-\nu|}}$$

$$\Gamma_{\theta\theta} = \frac{E}{1-\nu^2} \left(\epsilon_{\theta\theta} + \nu \epsilon_{rr} \right) - \frac{E \lambda T}{1-\nu}$$

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$$\frac{d^{2}u + 1}{dt^{2}} \frac{du - u}{dr} = d(1t^{2}) \frac{dT}{dr}$$

$$\frac{d}{dt^{2}} \frac{1}{r} \frac{d}{dr} \frac{ru}{dr} = d(1t^{2}) \frac{dT}{dr}$$

$$u = d(1t^{2}) \int Tr dr + C_{1}r + C_{2}r$$
Use mechanical BCs to get C₁, C₂.