

$$\delta \phi = \delta \phi = 0 =$$

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$$= \delta \phi = 2 \left[e\sqrt{2} \left(\frac{1}{e\sqrt{2}} \right) \left(-9e\sqrt{2} + \frac{X}{e\sqrt{2}} \right) \frac{1}{EA} + \right. \\ \left. + e\sqrt{2} \left(-\frac{1}{e\sqrt{2}} \right) \left(-9e\sqrt{2} - \frac{X}{e\sqrt{2}} \right) \frac{1}{EA} \right] +$$

$$+ \frac{1}{EI} \int_0^{2\ell} \left(-\frac{1}{2\ell} z \right) \left(9\ell z - \frac{9z^2}{2} - \frac{X}{2\ell} z \right) dz =$$

$$= 2 \left(-9e\sqrt{2} + \frac{X}{e\sqrt{2}} + 9e\sqrt{2} + \frac{X}{e\sqrt{2}} \right) \frac{1}{EA} +$$

$$+ \frac{1}{EI} \int_0^{2\ell} \left(-\frac{9z^2}{2} + \frac{9z^3}{4\ell} + \frac{Xz^2}{4\ell^2} \right) dz =$$

$$= \frac{X2\sqrt{2}}{eA} + \frac{1}{EI} \left(-\frac{9 \cdot 8\ell^3}{6} + \frac{9 \cdot 16\ell^4}{16\ell} + \frac{X \cdot 8\ell^3}{12\ell^2} \right) =$$

$$= \frac{X2\sqrt{2}}{eA} + \frac{X2\ell}{3EI} - \frac{9\ell^3}{3EI} = X \left(\frac{2\sqrt{2}}{eA} + \frac{2\ell}{3EI} \right) - \frac{9\ell^3}{3EI}$$

$$\underline{X = \frac{9\ell^3}{3EI} \bigg/ \left(\frac{2\sqrt{2}}{eA} + \frac{2\ell}{3EI} \right)}$$