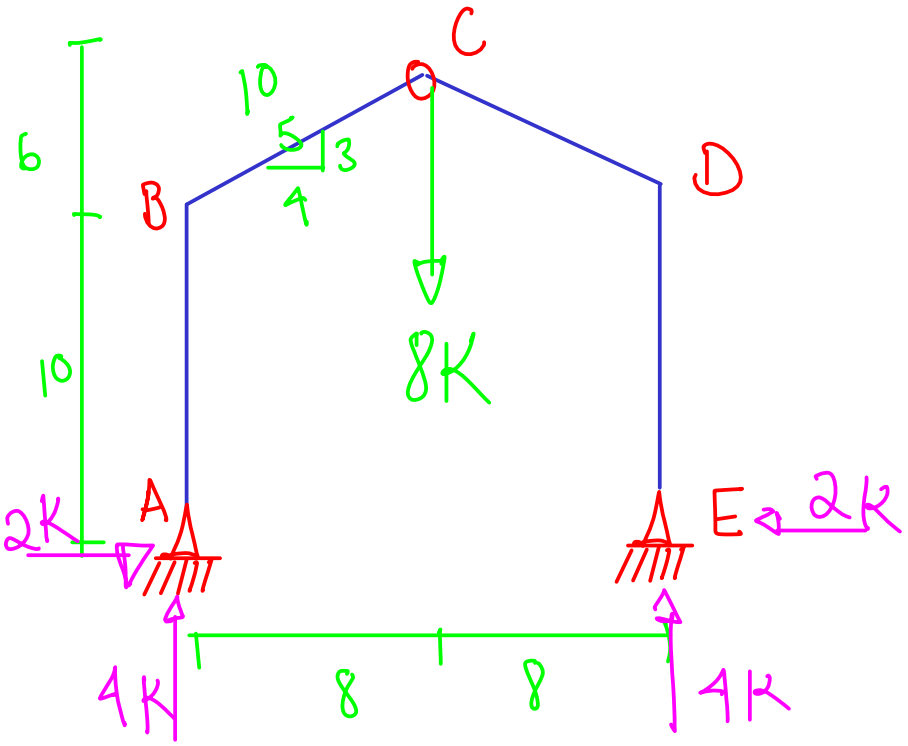
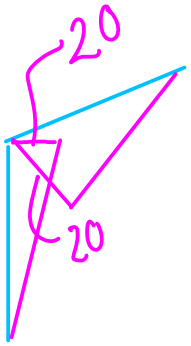
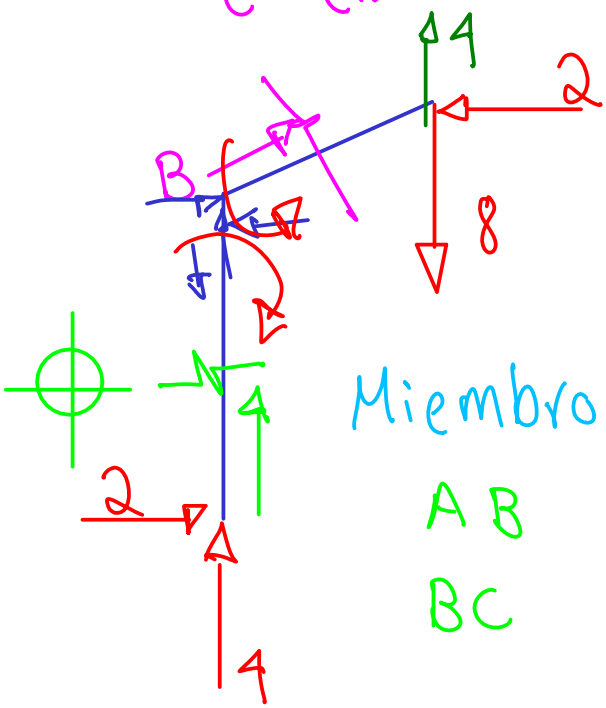


$\delta_{P_{V_C}} = ?$

$EI = cte.$

$\Sigma M_C = (4)(8) - A_x(16) = 0 \quad A_x = 2\ K$

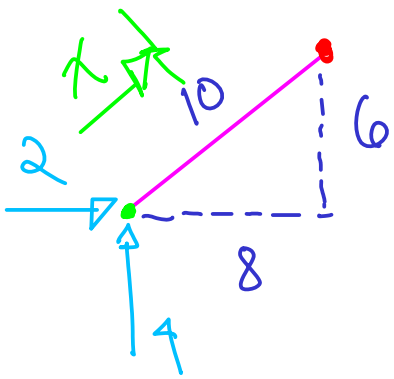


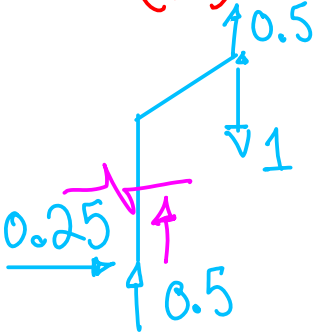


Miembro	Origen	Limites	M_P	M_Q
AB	A	0-10	$2X$	$0.25X$
BC	B	0-10	$20-2X$	$2.5-0.25X$

$20 - 2X$

$2\left(\frac{6}{10}\right)X - 4\left(\frac{8}{10}\right)X = -2X$





$\Sigma M_C = 0.5(8) - A_x(16) = 0$

$A_x = 0.25$

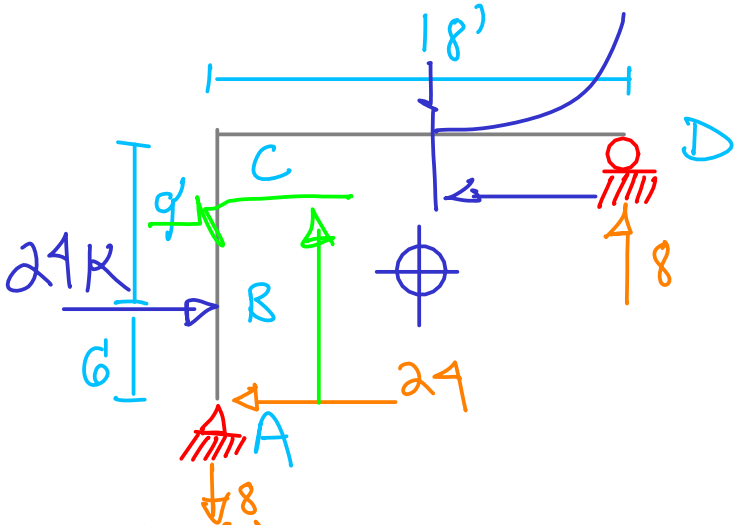
$0.25\left(\frac{6}{10}\right)X - 0.5\left(\frac{8}{10}\right)X = -0.25X$

$$EI\,1\,\delta_{P_{V_C}}^{X2} = \int_0^{10} (2x)(0.25x)\,dx + \int_0^{10} (20-2x)(2.5-0.25x)\,dx$$

$$\int_0^{10} 0.5x^2\,dx + \int_0^{10} 50 - 5x - 5x + 0.5x^2\,dx$$

$$\frac{0.5x^3}{3}\Big|_0^{10} + \left(50x - 5x^2 + \frac{0.5x^3}{3}\right)\Big|_0^{10} = 166.67 + 166.67$$

$$= \frac{1000}{3} \rightarrow \delta_{P_{V_C}} = 2\left(\frac{1000}{3EI}\right) = \frac{2000}{3EI} = \frac{666.67}{EI}$$



Considere la energía de deformación asociada con tanto la carga axial como el momento.

Calcule la deflexión horizontal en C del marco.

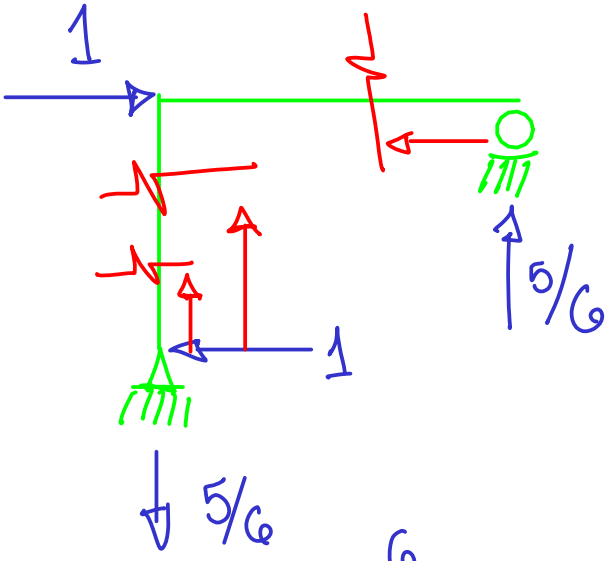
Los miembros son de sección transversal constante con I = 600 in⁴, A = 13 in² y E = 29,000 kip/in².

$24(6) = 144$

$144/18 = 8$

Miembro	Origen	Límites	M_P (F_P)	M_Q (F_Q)
AB	A	0-6	$24x$	x
BC	A	6-15	144	x
CD	D	0-18	$8x$	$\frac{5}{6}x$

$24x - (24(x-6)) = 24x - (24x - 144) = +144$ ✓



$(1)(15)$

$15/18 = \frac{5}{6}$

	F_P	F_Q
AB	8	5/6
BC	8	5/6
CD	0	0

$$1\delta_{Ph_C} = \int_0^6 \frac{(24x)(x)}{EI}dx + \int_6^{15} \frac{(144)(x)}{EI}dx + \int_0^{18} \frac{(8x)(5x)dx}{6EI}$$

$$+ \frac{(8)(5)(15)(12)}{6AE} = \int_0^6 \frac{24x^2}{EI}dx + \int_6^{15} \frac{144x\,dx}{EI}$$

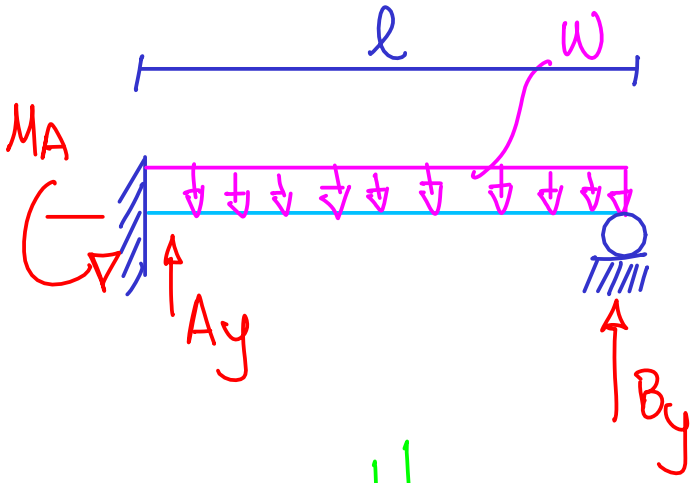
$$+ \int_0^{18} \frac{40x^2}{6EI}dx + \frac{1200}{AE} = \frac{8x^3}{EI}\Big|_0^6 + \frac{72x^2}{EI}\Big|_6^{15}$$

$$+ \frac{20x^3}{9EI}\Big|_0^{18} + \frac{1200}{AE} = \frac{1728}{EI} + \frac{13608}{EI} + \frac{12960}{EI}$$

$$+ \frac{1200}{AE} = \frac{28,296}{EI} + \frac{1200}{AE} = \frac{28,296(1728)}{(29,000)(600)}$$

$$+ \frac{1200}{(13)(29,000)} = \overset{Fl.}{2.81} + \overset{Ax}{0.003} = 2.813 \text{ in} \rightarrow$$

Utilizando el Momento MA del apoyo fijo como redundante, analice la viga por el método de las flexibilidades.



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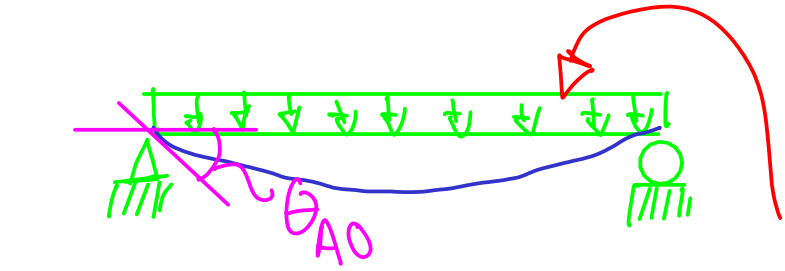

+

$$\theta_{AO} + \theta_{AA} M_A = 0$$

$$\frac{-wl^3}{24EI} + \frac{M_A l}{3EI} = 0$$

$$\frac{M_A l}{3EI} = \frac{wl^3}{24EI}$$

$$M_A = \frac{wl^2}{8}$$