$$H(s) = \frac{s + 4\omega}{s^2 + \omega^2}$$

$$X(s) = \frac{2s + 11}{s^2 + 11s + 18}$$

$$Y(s) = X(s)H(s)$$

$$Y(s) = \frac{2s^2 + 8s\omega + 11s + 4\omega^3}{(s^2 + \omega^2)(s^2 + 11s + 18)}$$

$$Y(s) = \frac{s(2s + 11) + \omega(8s + 4\omega^2)}{(s^2 + \omega^2)(s + 9)(s + 2)}$$

$$\frac{s(2s + 11) + \omega(8s + 4\omega^2)}{(s^2 + \omega^2)(s + 9)(s + 2)} = \frac{A}{s^2 + \omega^2} + \frac{B}{s + 9} + \frac{C}{s + 2}$$

I think this is correct to this point.

s=-2, w=0

$$s(2s + 11) + \omega(8s + 4\omega^2) = (A)(s + 9)(s + 2) + (B)(s^2 + \omega^2)(s + 2) + (C)(s^2 + \omega^2)(s + 9)$$

$$-2(-4 + 22) + \omega(-16 + 4\omega^2) = (A)(7)(0) + (B)(4 + \omega^2)(0) + (C)(4 + \omega^2)(7)$$

$$52 + \omega(-16 + 4\omega^2) = 7A + (4B + B\omega^2) + 28C + 7\omega^2 C$$

$$7A + 4B + 28C = 52$$

s=-9, w=0

$$s(2s + 11) + \omega(8s + 4\omega^2) = (A)(s + 9)(s + 2) + (B)(s^2 + \omega^2)(s + 2) + (C)(s^2 + \omega^2)(s + 9)$$

$$-9(-18 + 11) = (A)(-9 + 9)(-9 + 2) + (B)(81 + \omega^2)(-7) + (C)(81 + \omega^2)(-9 + 9)$$

$$63 = -7A + 567B + 81C$$

$$A + \frac{4}{7}B + 4C = 7\frac{3}{7}$$