Macaulay duration $\boxed{10\,yr\quad 6\%\quad 1000}$ bond
annual coupons/redemption of $\boxed{\$1200}$ if the
yield to maturity is $\boxed{9\%}$

coupon:
$Fr = 1000(.06) = 60$ $\qquad$ $\boxed{P = Fr\, a_{\overline{n}|j} + C v_j^n}$

$$P(.09) = 60\, a_{\overline{10}|.09} + 1200\left(\frac{1}{1.09^{10}}\right)$$

$$\approx \boxed{\$891.9524304}$$

Macaulay duration

$$\boxed{D(.09, \infty) = \frac{1}{P}\left(\sum_{k=1}^{9} 60k\, v_{.09}^{k} + 10\left(1260\, v_{.09}^{10}\right)\right)} \qquad *\,v = \frac{1}{(1+i)^n}$$

$$= \boxed{\frac{60}{P}(Ia)_{\overline{9}|.09}} + \frac{12600\, v_{.09}^{10}}{P}$$

$$= \frac{60}{891.9524304}\left(\frac{\ddot{a}_{\overline{9}|.09} - 9\, v_{.09}^{9}}{.09}\right) + \frac{2600\, v_{.09}^{10}}{891.9524304}$$

$$= .0672681613\left(\frac{\frac{1 - v_{.09}^{9}}{\frac{.09}{1.09}} - 4.14385}{.09}\right) + \frac{12600\, v_{.09}^{10}}{891.9524304}$$

$$\approx 7.75417537$$

$$= \boxed{7.75\,yrs}$$