YTM revision

YTM is implicitly defined, there's no equation for it. Rather its derived from the equation for the price of a bond.

It's defined for a given bond, at a given point in time (since price changes with time)

Time to maturity: T-t

It's really just the sum of the cash flows. The numerator is what you're getting paid:

1. The coupon you get (c). But its paid semiannually aka every 6 monhs so: c/2 * 100
2. You get repaid at the end.
    a. Face value (100) + you're last coupon
    b. 100 (1 + c/2)

YTM is a way to rationalize how price relates to the cash flows above. "How much would we have to divide the cashflows by to rationalise the price"

YTM is quoted semiannually. It's annualised on a semi-annual cashflow

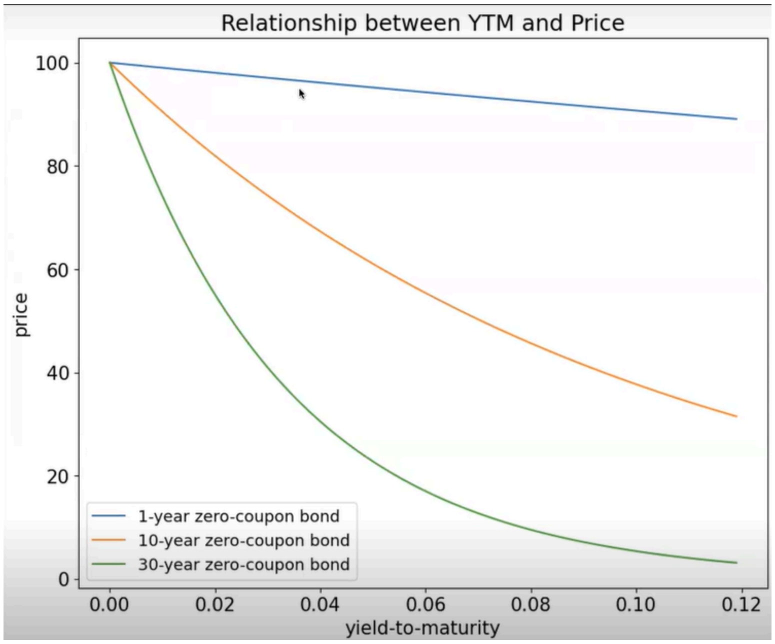
⇒ Always divide it by 2 (y/2)

⇒ Since we calculate the semi annual YTM

And then you raise the time to maturity by 2. TTM = maturity time - current time = T - t

⇒ You're not counting how many years

⇒ Rather you count how many 6 month periods (since the cashflows come every 6 months)



In this example, no coupon is paid so price never goes above 100.

1. Price and YTM are inversely proportional. Higher YTM = Lower price. Clear from the equation, since P = term with y in denominator
2. Also note that, YTM is being exponentiated by TTM. This explains why the price of the 30 year bond has a huge drop when YTM is higher

When coupons vary greatly, YTM does not perfectly capture the difference.

Low YTM = Expensive price = Short it

Though such a bond may be high priced relative to others, but when the coupons differ by a lot, YTM is not a perfect statistic to compare those bonds.

Don’t trade bonds using nothing but YTM. Reasons:

- Within the model: Reason above (when coupons rate vary a lot)
- Outside the model (not captured by the equation):
    - Liquidity
    - Trading Costs