Example 1

- Calculate the value of an annual 4% coupon paying bond with five years to maturity and and a market discount rate of 6%.

$$PV = \frac{4}{(1.06)^1} + \frac{4}{(1.06)^2} + \frac{4}{(1.06)^3} + \frac{4}{(1.06)^4} + \frac{104}{(1.06)^5}$$

$$= 3.774 + 3.560 + 3.358 + 3.168 + 77.715 = \mathbf{91.575}$$

The bond price is 91.575 per 100 of par value.

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Example 2

– Calculate the value of an annual 8% semiannual coupon paying bond with five years to maturity and and a market discount rate of 6%.

$$PV = \frac{4}{(1.03)^1} + \frac{4}{(1.03)^2} + \frac{4}{(1.03)^3} + \frac{4}{(1.03)^4} + \frac{4}{(1.03)^5} + + \frac{4}{(1.03)^6} + \frac{4}{(1.03)^7} + \frac{4}{(1.03)^8} +$$

$$\frac{4}{(1.03)^9} + \frac{104}{(1.03)^{10}} = \mathbf{108.530}$$

The bond price is 108.530 per 100 of par value.

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Example 3

- Suppose that a four-year, 5% annual coupon paying bond is priced at 105 per 100 of par value. What is the yield?
  - The yield-to-maturity is the solution for the rate, r, in this equation:

$$105 = \frac{5}{(1+r)^1} + \frac{5}{(1+r)^2} + \frac{5}{(1+r)^3} + \frac{105}{(1+r)^4}$$

  - where r = 0.03634, or 3.634%.

The bond is traded at a premium because its coupon rate is greater than the yield required by investors.