

## UNIVERSITY OF TEXAS AT AUSTIN

Quiz #8  
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Please, provide your **complete solutions** to the following problems.

**Problem 8.1.** (5 points) *Source: SoA, May 2003, Problem #37.*

A company's dividend per share is expected to grow indefinitely at a rate of 6% per year. Suppose that the current stock price is 600 and the next annual dividend, payable one year from now is 20. John, Bill, and Fred each invest in the company. John invests for one year, Bill invests for two years, and Fred invests for three years. Who expects the highest annualized rate of return?

*Hint: You are supposed to use the dividend discount model.*

**Problem 8.2.** (5 points) *Source: SoA, November 1992, Problem #15.*

A common stock is purchased on January 1, 1992. It is expected to pay a dividend of 15 per share at the end of each year through December 31, 2001. Starting in 2002, dividends are expected to increase by  $\kappa\%$  per year indefinitely with  $\kappa < 0.08$ . The theoretical price to yield an annual effective rate of 8% is 200.90. Calculate  $\kappa$ .

**Problem 8.3.** (5 points) *Source: SoA, May 1989, Problem #15.*

On January 1 of each year, company ABC declares a dividend to be paid quarterly on its common shares. Currently, 2 per share is paid at the end of each calendar quarter. Future dividends are expected to increase at the rate of 5% **per year**. On January 1 of this year, an investor purchased some shares at  $X$  per share to yield 12% convertible quarterly. Calculate  $X$ .

*Hint: You are supposed to use the dividend discount model.*