

HW 7.2 Key

1. Marv sells a stock short for 4600. The proceeds of the sale are retained by the lender until close and do not accumulate interest. Marv is required to post margin equal to 76% of the value of the sale. The lender pays interest at an annual effective rate of 5% on the margin account. Marv closes the short 11 months later. At that time, the price of the stock is 3800. A dividend of 10 was paid by the stock 2 months prior to close. Marv had to pay this dividend to the lender at close with interest, calculated at 5% annual effective. Determine Marv's annual effective yield on the short sale.

A) 29.98% B) 30.88% C) 31.78% D) 32.68% E) 33.58%

$$\text{Initial Margin} = 4600(0.76) = 3496$$

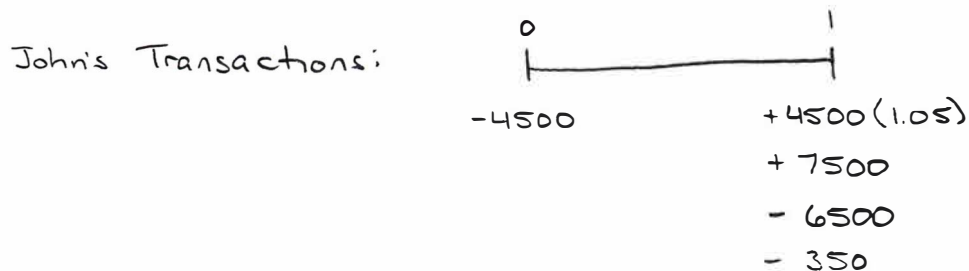
$$\text{Profit from short} = 4600 - 3800 = 800$$

$$3496(1+i)^{11/12} = 3496(1.05)^{11/12} + 800 - 10(1.05)^{2/12}$$

$$i = \boxed{0.2998}$$

2. John short sells a stock for \$7500. The proceeds of the sale are retained by the lender. (Ignore interest on the proceeds.) John must deposit \$4500 with the lender as collateral. He earns 5% effective on this haircut. At the end of one year, he closes his short position by buying the stock for \$6500 and returning it to the lender. A dividend of \$350 was payable one day before he covered the short. What was John's effective rate of interest on his investment? [10 #12]

☒ A) 19% B) 16% C) 17% D) 18% E) 21%



$$4500(1+i) = 4500(1.05) + 100 - 350$$

$$i = \boxed{19.44\%}$$

3. The bid and ask prices of a stock are as follows:

	Bid	Ask
January 1	51.00	51.50
July 1	X	$X + 0.50$

There is a commission of 10 on each transaction. Sam sells short 100 shares on January 1 and covers the short on July 1. Marge buys 100 shares of the stock on January 1 and sells them on July 1. Sam has a gain and Marge has a loss. The sum of Sam's gain and the absolute value of Marge's loss is 700. Determine X . (Ignore interest, haircuts, and dividends.) [10 #13]

- ☒ A) 47.50 B) 42.00 C) 43.50 D) 45.50 E) 49.50

$$\text{Sam's Gain} = 100(51) - 100(X + 0.50)$$

$$\text{Marge's Loss} = -100(51.50) + 100X$$

$$[100(51) - 100(X + 0.50)] + [100(51.50) - 100X] = 700$$

$$9500 = 200X \rightarrow X = \boxed{47.50}$$

4. You initiate a 200-share short position on ABC Corp. common stock. At that time, the bid and ask prices are \$65.00 and \$65.25, respectively. At the time you close your position, the bid and ask prices are \$56.75 and \$57.5, respectively. The commission is 0.7%. Ignoring interest income, what was the total profit on your short position? [10 #19]

- ☒ A) \$1329 B) \$1089 C) \$1169 D) \$1249 E) \$1408

$$200(65)(0.993) - 200(57.5)(1.007) = \boxed{1328.5}$$

5. Sally sells short 160 shares of stock X at a price of \$100. The broker requires an initial margin of 58% on short sales and the maintenance margin is 72% of the initial margin. Assuming no interest on margin loans, what price would stock X need to strike for Sally to receive a margin call?

- ☒ A) 116.24 B) 83.76 C) 118.56 D) 85.44 E) 87.14

$$\text{Proceeds from Short} = 160(100) = 16,000$$

$$\text{Initial Margin} = 0.58(16,000) = 9280$$

$$\text{Maintenance Margin} = 0.72(9280) = 6681.6$$

$$\text{Assume price inc. by } \Delta. \text{ New margin balance} = 9280 - 160\Delta$$

$$\text{Margin call occurs if: } 9280 - 160\Delta < 6681.6, \text{ or } \Delta > 16.24$$

$$100 + \Delta = \boxed{116.24}$$