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%

Initial Margin $= 4600(0.76) = 3496$

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%

John's Transactions:

-4500

$+4500(1.05)$
$+7500$
-6500
-350

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

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

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

Sam's Gain = $100(51) - 100(X + 0.50)$

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

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

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

Maintenance Margin = $0.72(9280) = 6681.6$

Assume price inc. by Δ. New margin balance = $9280 - 160\Delta$

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

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