

Warren sells short \$3000 of a common stock that pays dividends of \$20 after 6 months and \$15 after 18 months. The margin requirement is 50% and the annual effective interest rate on the margin account is 4%. 20 months after he sold the stock, Warren repurchases the stock (to cover the short sale) for 2500. Find his annual yield for this 20 month investment.

initial margin deposit

$$3000(0.5) = 1500$$

$$P(1.05) = .05P$$

$$.85P - \frac{d}{0.5P} = 11.65$$

$$5.825$$

dividends:

$$(20)\frac{6}{12}$$

$$(15)\frac{18}{12}$$

$$0.525P + P - d - 0.85P$$

$$\frac{(.675P - d) - 0.5P}{0.5P}$$

$$5\% \quad 12\%$$

$$\frac{.175P}{0.5P} - \frac{d}{0.5P} = 12$$

$$.35 - \frac{d}{0.5P} =$$

eur:

$$\hat{i} = 0.04$$

j = annual yield rate

$$0.5P(1+j) =$$

$$\frac{(.175P - d)}{0.5P} = 12$$

Equation of value:

$$1500(1+i)^{\frac{20}{12}} - 20(1+i)^{\frac{20}{12} - \frac{6}{12}} - 15(1+i)^{\frac{20}{12} - \frac{18}{12}} + 3000 - 2500 = 1500(1+j)^{\frac{20}{12}}$$

$$*i = 0.04$$

$$= 1500(1.04)^{\frac{20}{12}} - 20(1.04)^{\frac{14}{12}} - 15(1.04)^{\frac{2}{12}} + 500 = 1500(1+j)^{\frac{20}{12}}$$

$$= 2065.2927$$

$$\frac{1500(1+j)^{\frac{20}{12}}}{1500} = \frac{2065.2927}{1500}$$

$$(1+j)^{\frac{20}{12}} = 1.3768618$$

$$j = (1.3768618)^{\frac{12}{20}} - 1$$

$$j = 0.21153011$$

$$j = 21.15\%$$