LG 6 **P8–26 Manipulating CAPM** Use the basic equation for the capital asset pricing model (CAPM) to work each of the following situations.

a. Find the *required return* for an asset with a beta of 2.2 when the risk-free rate and market return are 5% and 32%, respectively.

b. Find the *risk-free rate* for a firm with a required return of 23.75% and a beta of 1.25 when the market return is 20%.

c. Find the *market return* for an asset with a required return of 18% and a beta of 1.2 when the risk-free rate is 8%.

d. Find the *beta* for an asset with a required return of 15% when the risk-free rate and market return are 3% and 15%, respectively.

P 8-26 $r_j = R_f + [B_j \times (r_m - R_f)]$

(a) $\beta = 2,2$, $R_f = 5\%$, $r_m = 32\%$

$r_j = 5\% + [2,2 \times (32\% - 5\%)] = ,644 = 64,4\%$

(b) $r_j = 23,75\%$, $\beta = 1,25$, $r_m = 20\%$

$23,75\% = R_f + [1,25 \times (20\% - R_f)]$

$23,75\% = R_f + ,25 - 1,25 R_f$

$,2375 = ,25 - ,25 R_f$

$-,0125 = -,25 R_f$

$R_f = ,05 = 5\%$

(c) $r_j = 18\%$, $\beta = 1{,}2$, $R_f = 8\%$

$18\% = 8\% + [1{,}2 \times (r_m - 8\%)]$

$,18 = ,08 + 1{,}2\, r_m - ,096$

$,18 = 1{,}2\, r_m - ,016$

$,196 = 1{,}2\, r_m$

$r_m = ,1633 = 16{,}33\%$

(d) $r_j = 15\%$, $R_f = 3\%$, $r_m = 15\%$

$15\% = 3\% + [\beta \times (15\% - 3\%)]$

$,15 = ,03 + ,15\beta - ,03\beta$

$,12 = ,12\,\beta$

$\beta = 1$

LG 6 **P8–28** **Security market line (SML)** Assume that the risk-free rate, R_F, is currently 9% and that the market return, r_m, is currently 13%.

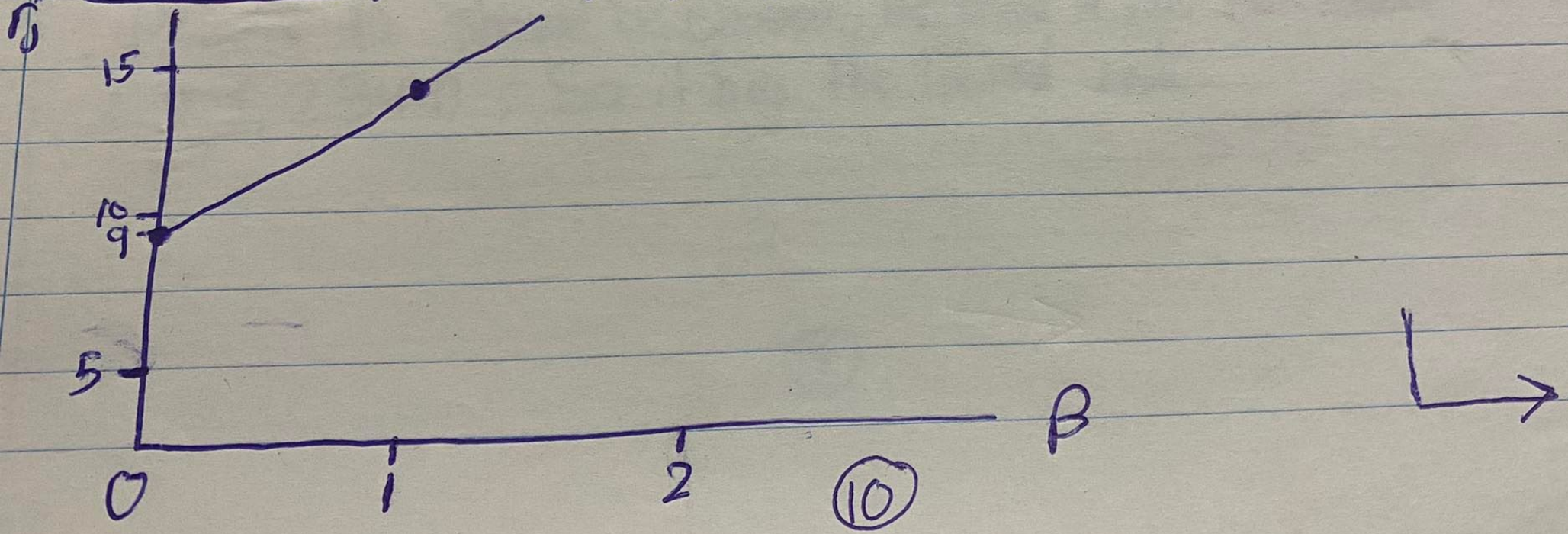
a. Draw the security market line (SML) on a set of "nondiversifiable risk (x axis)–required return (y axis)" axes.

b. Calculate and label the *market risk premium* on the axes in part **a.**

c. Given the previous data, calculate the required return on asset A having a beta of 0.80 and asset B having a beta of 1.30.

d. Draw in the betas and required returns from part **c** for assets A and B on the axes in part **a.** Label the *risk premium* associated with each of these assets, and discuss them.

P8-28 $R_F = 9\%$, $r_m = 13\%$, $\beta_{market} = 1$



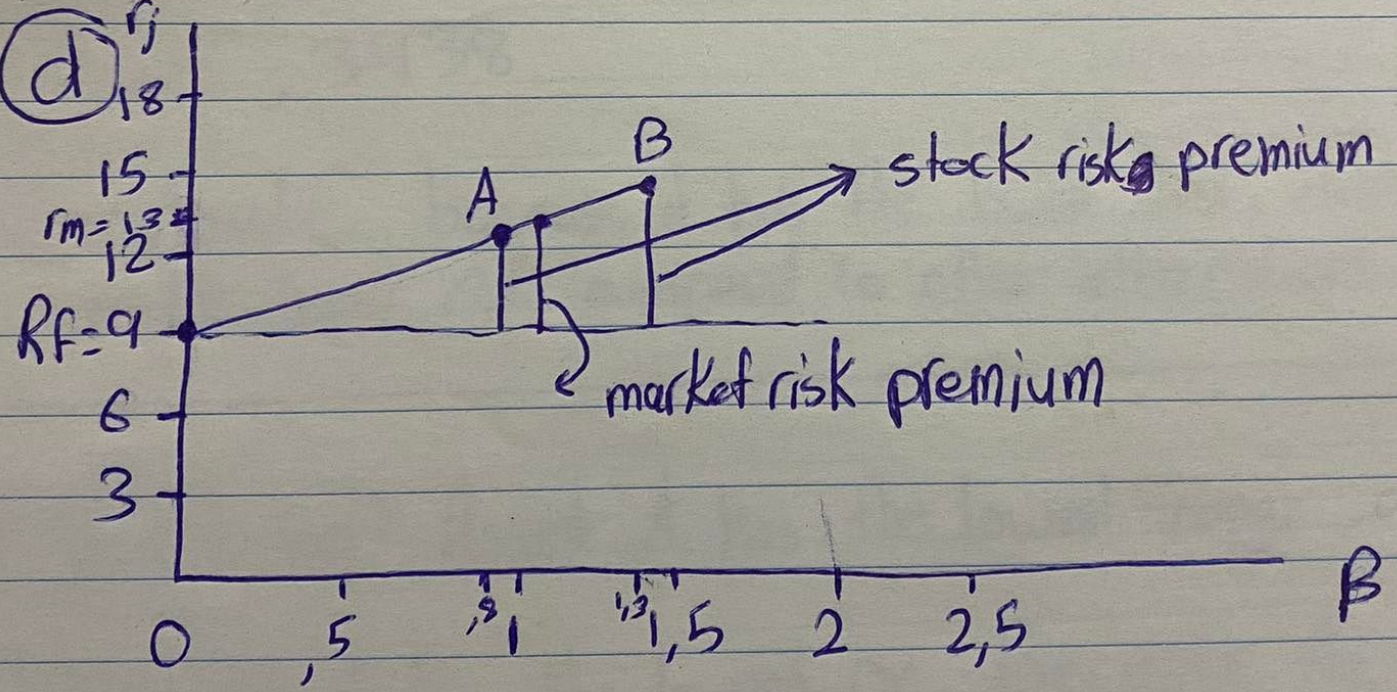
(b) Market risk premium $= r_m - R_f = 13\% - 9\% = 4\%$

(c) $\beta_A = ,8$, $\beta_B = 1,3$, $r_j = R_f + [(\beta_j \times (r_m - R_f)]$

$r_A = 9 + [,8\,(13-9)] = 12,2\%$

$r_B = 9 + [1,3\,(13-9)] = 14,2\%$

(d)



* Asset B has more required return (r_j) than asset B, so asset B is more risky.