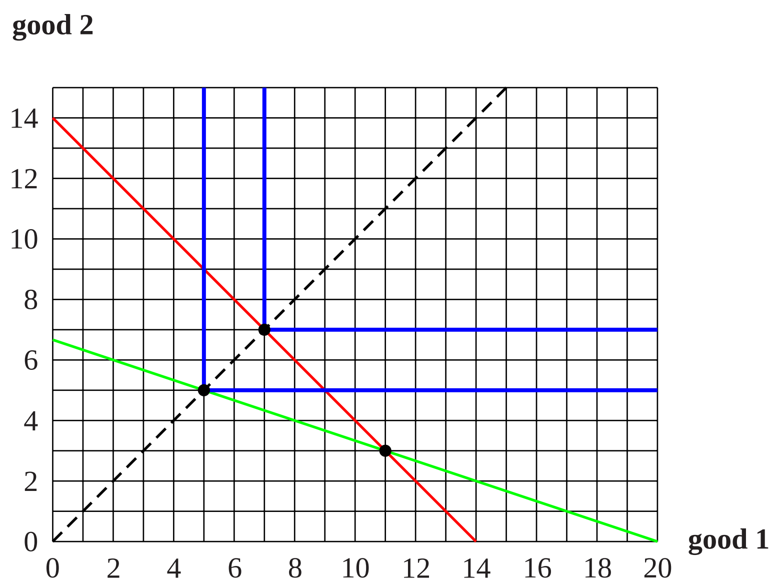
Question 1 Because good 2 is less expensive, $x_1 = 0$. The value of his endowment is $36 + 10 = 46$. Because $p_2 = 1$,

He consumes 46 units of good 2

Question 2 $\boldsymbol{e = (11, 3)}$.



Question 3 Note that MRS $= -\frac{3x_2}{x_1} = -\frac{p_2}{p_2} = -\frac{1}{2}$. therefore, $6x_2 = x_1$. Since $x_1 = 5$,

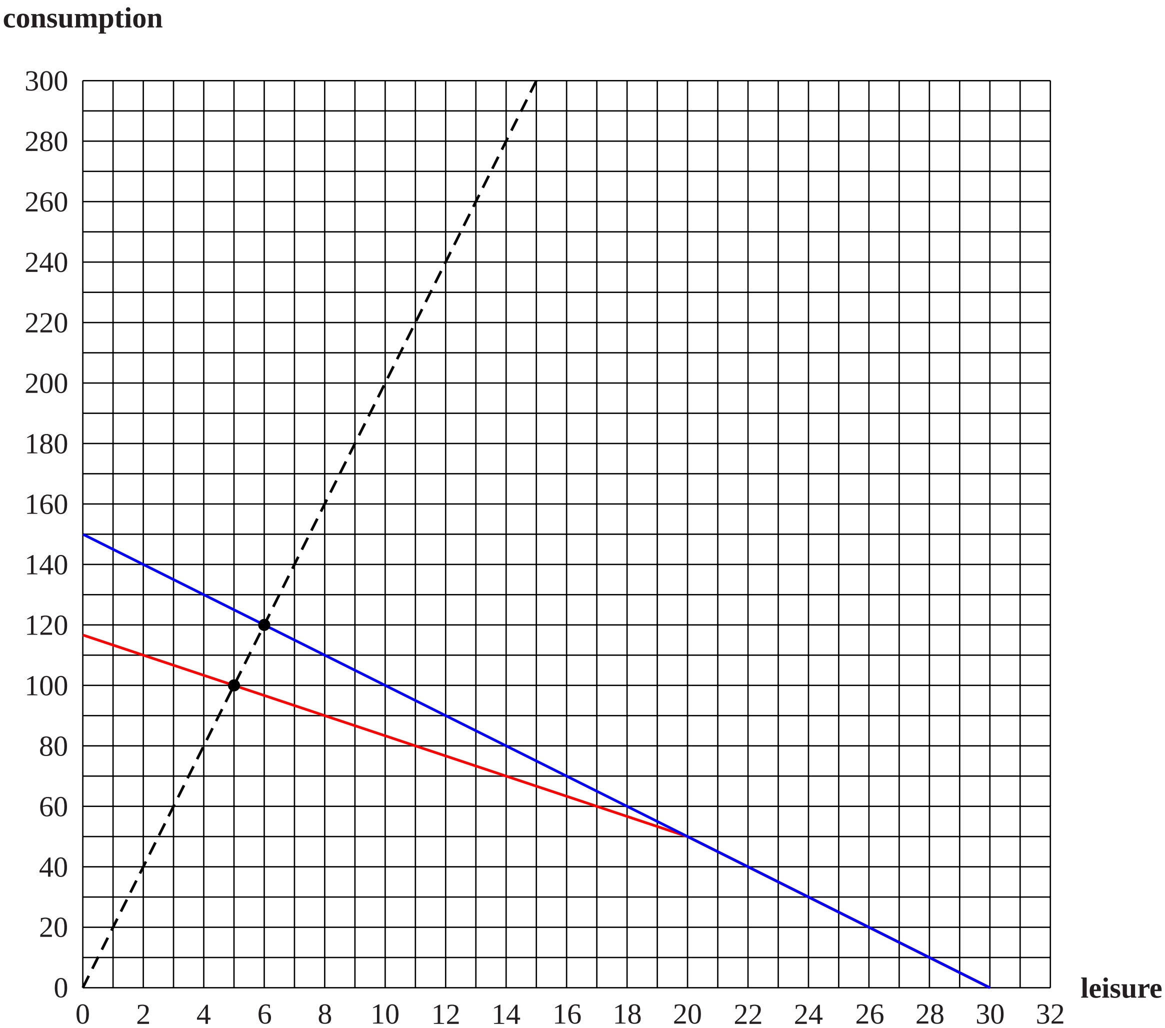
Mary's endowment of good 2 is 5

Question 4 $-\frac{c^2}{R^2} = -25$ implies $\frac{c}{R} = 5$. Therefore, $c = 5R$. His budget line equation is $25R + c = 1,500 + 120$. Therefore, $R = 54$.

Joe will work 6 hours per week.

Question 5 **Alice will work 25 hours per week.**

If the tax is eliminated then Alice will work 24 hours per week.



Question 6

(a) At the optimal choice $-\frac{x_2}{0.9x_1} = -(1+r) = -1.1$, which implies $x_2 = 0.99x_1$. The budget line equation is $1.1x_1 + x_2 = 22,000 + 44,880 = 66,880$. Therefore,

George will spend \$32,000 this year.

(b) At the optimal choice $-\frac{x_2}{0.9x_1} = -(1+r) = -1.2$, which implies $x_2 = 1.08x_1$. The budget line equation is $1.2x_1 + x_2 = 26,400 + 46,104 = 72,504$. Therefore, $x_1 = 31,800$.

George will spend \$31,800 this year.

10 points

Question 7 $c_g = 1.4y + (450 - y)0.9 = 0.5y + 405$ and $c_b = 0.8y + (450 - y)1.1 = 495 - 0.3y$. Eliminating y, these equations can be combined to the budget line equation $3c_g + 5c_b = 3,690$. Expected utility is given by

$u(c_g, c_b) = (1/3)\ln(c_g) + (2/3)\ln(c_b)$. Therefore, MRS $= -\frac{c_b}{2c_g}$. At the optimal choice, $-\frac{c_b}{2c_g} = -\frac{3}{5}$. Therefore, $5c_b = 6c_g$. This, and the budget line equation yields, $c_g = 410$ and $c_b = 492$. Using $c_g = 0.5y + 405$ or $c_b = 495 - 0.3y$ we can now determine y. Therefore,

Susan will invest \$10 in fund *A*.

Susan will invest \$440 in fund *B*.

Question 8 Nick's expected utility is $0.3(-1) + 0.1(-0.1) + 0.6(-10)$. Therefore,

Nick's expected utility from playing the lottery is -6.31

The maximum he should pay is the certainty equivalent, i.e., we must find the value x at which $-\frac{100}{x} = -6.31$. Thus, $6.31x = 100$, which implies

Nick should pay at most \$15.85 to play the lottery.

Question 9 We must have $\sqrt{6,400} = (3/4)\sqrt{400} + (1/4)\sqrt{6,400 + y}$. Therefore, $80 = 15 + \sqrt{6,400 + y}/4$. Therefore $\boxed{y = 61,200}$