H3.3-16 Derive Fourier coefficient formulas for Fourier series on $a \le x \le b$.

Hint: $y = \frac{a+b}{2} + \frac{b-a}{2}\frac{x}{L}$

Solve for x in terms of y

$$2y = a+b+(b-a)\frac{x}{L}$$

$$\frac{2y}{b-a} = \frac{a+b}{b-a} + \frac{x}{L}$$

$$x = L\left(\frac{2y}{b-a} - \frac{a+b}{b-a}\right)$$

$$\frac{n\pi x}{L} = \frac{2n\pi y}{b-a} - \frac{(a+b)n\pi}{b-a}$$