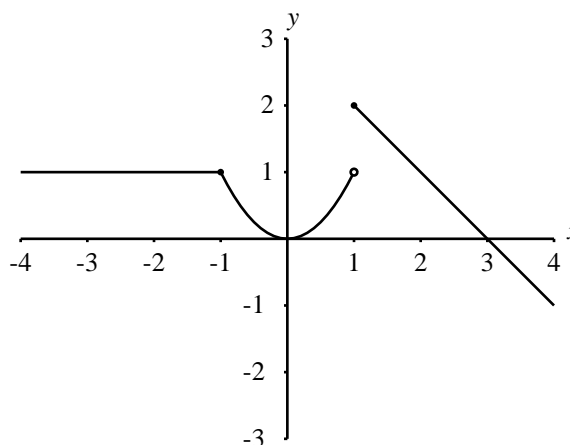


1. On the axes provided, sketch a graph of the function f given by

$$f(x) = \begin{cases} 1 & \text{if } x < -1 \\ x^2 & \text{if } -1 \leq x < 1 \\ 3 - x & \text{if } x \geq 1 \end{cases}$$



2. A certain photo processing machine takes 670 seconds to process and print a 24-exposure roll of film, and 730 seconds to process and print a 36-exposure roll of film. Assuming that a linear model is appropriate, find a formula for T , the amount of time required to process and print a roll of film, as a function of n , the number of exposures.

Solution: We have $T = 670$ when $n = 24$ and $T = 730$ when $n = 36$. Assuming $T = mn + b$, we can find the slope m as

$$\frac{730 - 670}{36 - 24} = \frac{60}{12} = 5.$$

To find b , we substitute one of the given data into the model, getting

$$\begin{aligned} 670 &= 5(24) + b \\ &= 120 + b, \end{aligned}$$

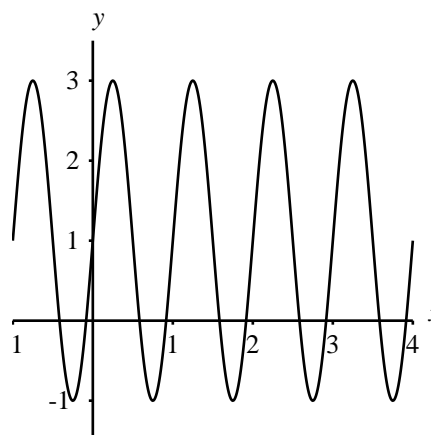
from which we get that $b = 550$. The function we want is

$$T = 5n + 550.$$

3. At right is the graph of the function

$$f(x) = \boxed{1} + \boxed{2} \sin(\boxed{2\pi} x).$$

Fill in the blanks.



We get the given curve from the graph of the sine function stretched vertically by 2 units, shifted up one unit, and compressed horizontally by 2π units.