1) A sinusoidal function has an amplitude of 5 units, a period of 120°, and a maximum at (0, 3).

    a) Represent the function with an equation using a sine function
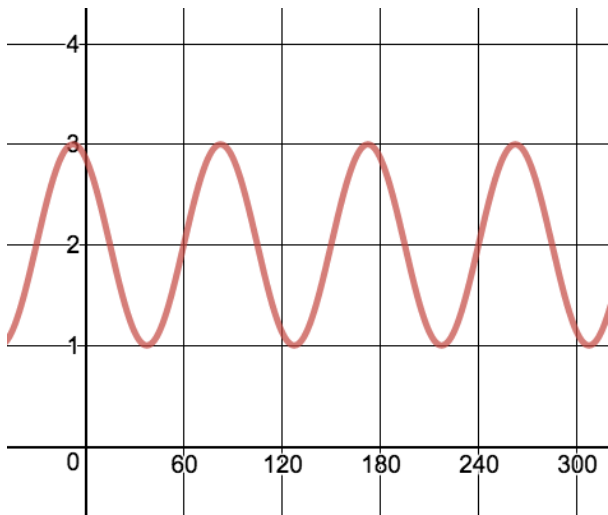
    b) Represent the function with an equation using a cosine function

2) A sinusoidal function has an amplitude of $\frac{1}{2}$ units, a period of 720°, and a maximum at $\left(0, \frac{3}{2}\right)$.
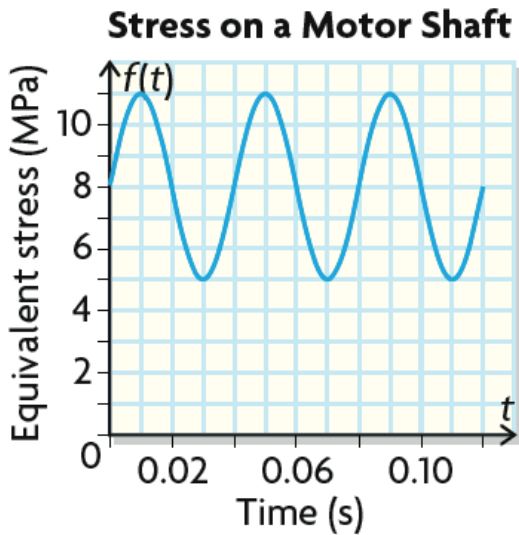
    a) Represent the function with an equation using a sine function

   **b)** Represent the function with an equation using a cosine function

**3)** Determine the equation of a cosine function that represents the graph shown.

4) The relationship between the stress on the shaft of an electric motor and time can be modelled with a sinusoidal function. Determine an equation of a function that describes stress in terms of time.

Stress on a Motor Shaft

5) Determine the equation of the sine function shown.
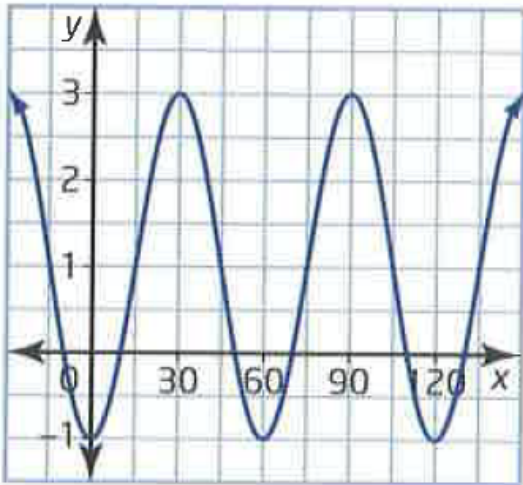
6) Represent the graph of the following functions using a sine and cosine function.
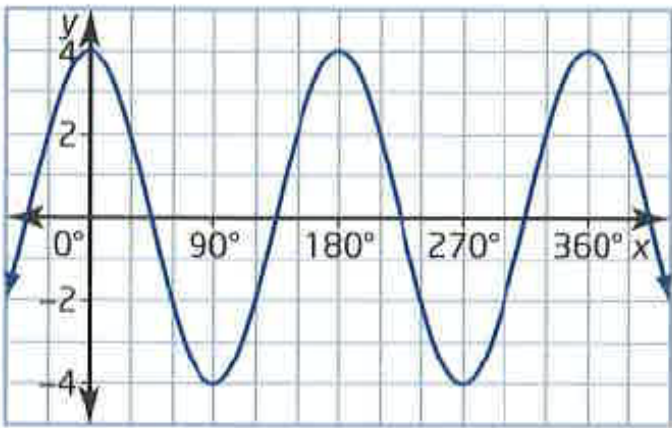
Answers

1) a) $y = 5 \sin [3(x + 30°)] -2$ **b)** $y = 5 \cos 3x -2$

2) a) $y = \frac{1}{2}\sin\left[\frac{1}{2}(x + 180°)\right] + 1$ **b)** $y = \frac{1}{2}\cos\frac{1}{2}x + 1$

3) $y = \cos [4(x - 82.5°)] + 2$

4) $y = 3 \sin (9000x) + 8$ OR $y = 3\cos[9000(x - 0.01)] + 8$

5) a) $y = 2 \sin [6(x - 15°)] + 1$

6) $y = 4 \cos 2x$ and $y = 4 \sin [2(x + 45°)]$.