

Chapter 6 Review Extra Practice

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1. Sketch the graph of a periodic function with a period of 45, an amplitude of 3, and an equation of the axis of $y = -4.5$.

2. Determine the coordinates of each of the following points.

- the point resulting from a rotation of 72° about $(0, 0)$ from the point $(\frac{1}{4}, 0)$
- the point resulting from a rotation of 8° about $(0, 0)$ from the point $(16, 0)$
- the point resulting from a rotation of 59° about $(0, 0)$ from the point $(6, 0)$
- the point resulting from a rotation of 81° about $(0, 0)$ from the point $(\frac{1}{2}, 0)$

3. State the transformation that has occurred to the graph of either $y = \sin x$ or $y = \cos x$ to result in each of the following sinusoidal functions.

- $y = \cos(x - 71^\circ)$
- $y = \sin\left(\frac{1}{25}x\right)$
- $y = 19 \cos x$
- $y = \sin x - \frac{1}{11}$
- $y = -\cos x$
- $y = \sin 50x$

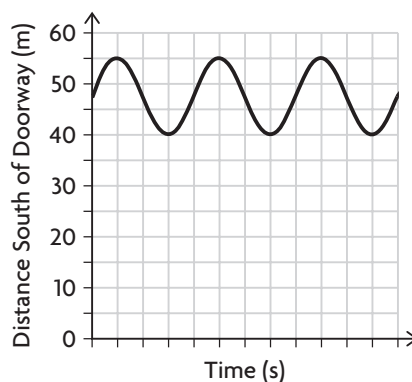
4. Each of the following functions starts at $x = 0^\circ$ and finishes after five complete cycles. State the period, amplitude, equation of the axis, domain, and range of each.

- $h(x) = 17 \cos(9x - 18^\circ) + 13$
- $j(x) = -\frac{3}{10} \sin(2(x - 12^\circ)) - 4$
- $h(x) = 33 \cos\left(\frac{1}{4}(x + 20^\circ)\right) - 61$
- $j(x) = -\sin(12x - 3^\circ) + 32$
- $h(x) = 2 \cos\left(\frac{1}{6}x + 42^\circ\right) - 70$
- $j(x) = 8.5 \sin(3x - 9.5^\circ) + 3.5$

5. Determine the equation for each of the following sinusoidal functions.

- the function has an amplitude of 15.5, a period of 90° , and a maximum at $(0, 19)$
- the function has an amplitude of 7, a period of 20° , and a minimum at $(0, -3.5)$
- the function has an amplitude of 11, a period of 1° , and a maximum at $(0, 226)$
- the function has an amplitude of $\frac{1}{50}$, a period of 3600° , and a minimum at $(0, \frac{1}{25})$

6. Edna is an astronaut undergoing training in a human centrifuge, and a doorway is located directly north of the centrifuge. The following graph shows Edna's distance south of the doorway as a function of time once the centrifuge has reached full speed.



- What is the equation of the axis of the function?
- What is the amplitude of the function, and what does it represent in this situation?
- What is the period of the function, and what does it represent in this situation?
- What is the range of the function?
- Determine the equation of the sinusoidal function.
- What is Edna's distance south of the doorway at $t = 5$ s? How about at $t = 30.8$ s?