Lesson 6.5 Extra Practice

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1. State the transformations in the correct order that should be applied to the graph of $f(x) = \sin x$ to produce each of the following sinusoidal functions.

a) $f(x) = -7\sin(x + 68°) - 12$

b) $f(x) = \frac{1}{3}\sin(3(x - 19°))$

c) $f(x) = \sin\left(\frac{1}{15}(x + 88°)\right) + 6$

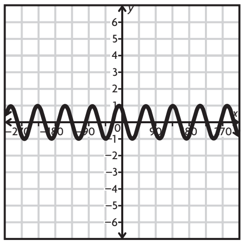
d) $f(x) = 8\sin(x - 34°) - 22$

e) $f(x) = -17\sin\left(\frac{1}{7}(x + 8°)\right)$

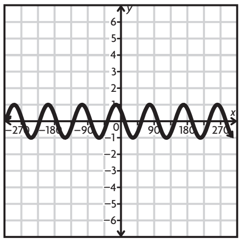
f) $f(x) = -\sin(41(x - 31°)) + 14$

2. Match each of the following graphs to its corresponding function.

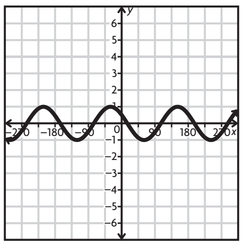
a)



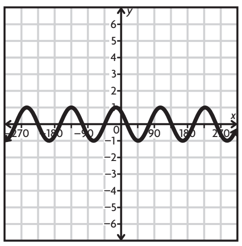
b)



c)



d)



i) $f(x) = \cos(2x + 60°)$

ii) $f(x) = \cos(5x + 30°)$

iii) $f(x) = \cos(4x + 60°)$

iv) $f(x) = \cos(3x + 30°)$

3. After applying the necessary horizontal stretch or compression to the graph of $g(x) = \sin x$, what is the horizontal translation required to complete the transformation for each of the following functions?

a) $g(x) = \sin(8x + 72°)$

b) $g(x) = \sin(15(x - 30°))$

c) $g(x) = \sin(0.25x + 40°)$

d) $g(x) = \sin\left(\frac{1}{2}(x - 45°)\right)$

e) $g(x) = \sin(18x - 360°)$

f) $g(x) = \sin(2(x + 90°))$

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

a) $f(x) = -29\sin(2x + 34°) - 3$

b) $g(x) = \frac{1}{20}\cos(10(x + 1°)) + 9$

c) $f(x) = 6\sin\left(\frac{1}{5}(x - 50°)\right) + 55$

d) $g(x) = -\cos(18x + 54°) - 12$

e) $f(x) = 3\sin\left(\frac{1}{8}x - 32°\right) + 4$

f) $g(x) = 0.5\cos(5x + 4.5°) - 1.5$

5. Determine whether or not the following transformations to the graph of the function $g(x) = \cos x$ are in the correct order.

a) Move $g(x)$ 17.5 units up. Vertically stretch $g(x)$ by a factor of 3.5.

b) Horizontally compress $g(x)$ by a factor of $\frac{1}{14}$. Move $g(x)$ 59° to the left.

c) Move $g(x)$ 16 units down. Horizontally stretch $g(x)$ by a factor of 21.

d) Move $g(x)$ 17° to the right. Horizontally stretch $g(x)$ by a factor of 12.