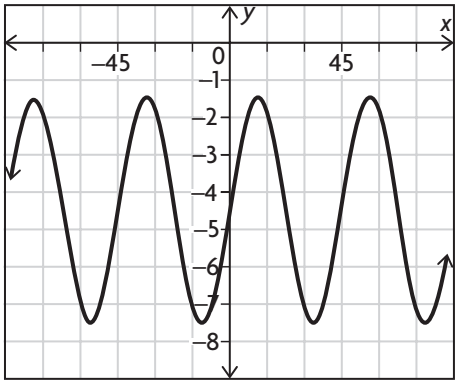
Chapter 6 Review Extra Practice Answers

1. Answers may vary. One example is the following:



2. a) (0.08, 0.24)
b) (15.84, 2.23)
c) (3.09, 5.14)
d) (0.08, 0.49)

3. a) The function $y = \cos x$ has been moved to the right by 71°.
b) The function $y = \sin x$ has been horizontally stretched by a factor of 25.
c) The function $y = \cos x$ has been vertically stretched by a factor of 19.
d) The function $y = \sin x$ has been moved down $\frac{1}{11}$ units.
e) The function $y = \cos x$ has been reflected in the x-axis.
f) The function $y = \sin x$ has been horizontally compressed by a factor of $\frac{1}{50}$.

4. a) period: 40°; amplitude: 17; equation of the axis: $h = 13$; $D = \{x \in \mathbf{R} \mid 0 \le x \le 200\}$; $R = \{h \in \mathbf{R} \mid -4 \le h \le 30\}$
b) period: 180°; amplitude: $\frac{3}{10}$; equation of the axis: $j = -4$; $D = \{x \in \mathbf{R} \mid 0 \le x \le 900\}$; $R = \{j \in \mathbf{R} \mid -4\frac{3}{10} \le j \le -3\frac{7}{10}\}$
c) period: 1440°; amplitude: 33; equation of the axis: $h = -61$; $D = \{x \in \mathbf{R} \mid 0 \le x \le 7200\}$; $R = \{h \in \mathbf{R} \mid -94 \le h \le -28\}$
d) period: 30°; amplitude: 1; equation of the axis: $j = 32$; $D = \{x \in \mathbf{R} \mid 0 \le x \le 150\}$; $R = \{j \in \mathbf{R} \mid 31 \le j \le 33\}$
e) period: 2160°; amplitude: 2; equation of the axis: $h = -70$; $D = \{x \in \mathbf{R} \mid 0 \le x \le 10\,800\}$; $R = \{h \in \mathbf{R} \mid -72 \le h \le -68\}$
f) period: 120°; amplitude: 8.5; equation of the axis: $j = 3.5$; $D = \{x \in \mathbf{R} \mid 0 \le x \le 600\}$; $R = \{j \in \mathbf{R} \mid -5 \le j \le 12\}$

5. a) $f(x) = 15.5\cos(4x) + 3.5$ or $f(x) = 15.5\sin(4x + 90°) + 3.5$
b) $f(x) = -7\cos(18x) + 3.5$ or $f(x) = -7\sin(18x + 90°) + 3.5$
c) $f(x) = 11\cos(360x) + 215$ or $f(x) = 11\sin(360x + 90°) + 215$
d) $f(x) = -\frac{1}{50}\cos\left(\frac{1}{10}x\right) + \frac{3}{50}$ or $f(x) = -\frac{1}{50}\sin\left(\frac{1}{10}x + 90°\right) + \frac{3}{50}$

6. a) $d = 47.5$ m
b) 7.5 m; the radius of the human centrifuge
c) 1 s; the amount of time it takes the human centrifuge to make one complete revolution
d) $R = \{d \in \mathbf{R} \mid 40 \le d \le 55\}$
e) $d(t) = 7.5\sin(360t) + 47.5$
f) 47.5 m; 40.37 m