

## Lesson 6.6 Extra Practice Answers

1. a)  $f(x) = \sin x$  has been stretched vertically by a factor of 28;

$$D = \{x \in \mathbf{R}\}; R = \{y \in \mathbf{R} \mid -28 \leq y \leq 28\}$$

- b)  $f(x) = \sin x$  has been compressed vertically by a factor of  $\frac{3}{22}$  and reflected across the  $x$ -axis;

$$D = \{x \in \mathbf{R}\}; R = \left\{y \in \mathbf{R} \mid -\frac{3}{22} \leq y \leq \frac{3}{22}\right\}$$

- c)  $f(x) = \sin x$  has been stretched vertically by a factor of 21.5 and reflected across the  $x$ -axis;

$$D = \{x \in \mathbf{R}\}; R = \{y \in \mathbf{R} \mid -21.5 \leq y \leq 21.5\}$$

- d)  $f(x) = \sin x$  has been compressed vertically by a factor of  $\frac{1}{18}$ ;  $D = \{x \in \mathbf{R}\};$

$$R = \left\{y \in \mathbf{R} \mid -\frac{1}{18} \leq y \leq \frac{1}{18}\right\}$$

- e)  $f(x) = \sin x$  has been stretched vertically by a factor of 33;  $D = \{x \in \mathbf{R}\};$

$$R = \{y \in \mathbf{R} \mid -33 \leq y \leq 33\}$$

- f)  $f(x) = \sin x$  has been stretched vertically by a factor of  $\frac{9}{8}$  and reflected across the  $x$ -axis;

$$D = \{x \in \mathbf{R}\}; R = \left\{y \in \mathbf{R} \mid -\frac{9}{8} \leq y \leq \frac{9}{8}\right\}$$

2. a)  $f(x) = -\frac{7}{8} \sin x$

b)  $f(x) = 23.5 \sin x$

c)  $f(x) = \frac{2}{3} \sin x$

d)  $f(x) = -26 \sin x$

e)  $f(x) = -\frac{10}{11} \sin x$

f)  $f(x) = 60 \sin x$

3. a)  $f(x) = -11 \sin x$ ;  $D = \{x \in \mathbf{R}\};$   
 $R = \{y \in \mathbf{R} \mid -11 \leq y \leq 11\}$

b)  $f(x) = \frac{1}{5} \sin x$ ;  $D = \{x \in \mathbf{R}\};$   
 $R = \left\{y \in \mathbf{R} \mid -\frac{1}{5} \leq y \leq \frac{1}{5}\right\}$

c)  $f(x) = 60 \sin x$ ;  $D = \{x \in \mathbf{R}\};$   
 $R = \{y \in \mathbf{R} \mid -60 \leq y \leq 60\}$

d)  $f(x) = -\frac{3}{4} \sin x$ ;  $D = \{x \in \mathbf{R}\};$   
 $R = \left\{y \in \mathbf{R} \mid -\frac{3}{4} \leq y \leq \frac{3}{4}\right\}$

4. a) amplitude: 20; period:  $360^\circ$ ; equation of the axis:  
 $y = -3$ ;  $D = \{x \in \mathbf{R}\};$   
 $R = \{y \in \mathbf{R} \mid -23 \leq y \leq 17\}$

b) amplitude:  $\frac{17}{21}$ ; period:  $360^\circ$ ; equation of the axis:  
 $y = 1$ ;  $D = \{x \in \mathbf{R}\};$   
 $R = \left\{y \in \mathbf{R} \mid \frac{4}{21} \leq y \leq 1\frac{17}{21}\right\}$

c) amplitude: 23; period:  $360^\circ$ ; equation of the axis:  
 $y = -7$ ;  $D = \{x \in \mathbf{R}\};$   
 $R = \{y \in \mathbf{R} \mid -30 \leq y \leq 16\}$

d) amplitude:  $\frac{1}{25}$ ; period:  $360^\circ$ ; equation of the axis:  
 $y = -2$ ;  $D = \{x \in \mathbf{R}\};$   
 $R = \left\{y \in \mathbf{R} \mid -2\frac{1}{25} \leq y \leq -1\frac{24}{25}\right\}$

e) amplitude: 4; period:  $360^\circ$ ; equation of the axis:  
 $y = -75$ ;  $D = \{x \in \mathbf{R}\};$   
 $R = \{y \in \mathbf{R} \mid -79 \leq y \leq -71\}$

f) amplitude:  $\frac{49}{50}$ ; period:  $360^\circ$ ; equation of the axis:  
 $y = 4$ ;  $D = \{x \in \mathbf{R}\};$   
 $R = \left\{y \in \mathbf{R} \mid 3\frac{1}{50} \leq y \leq 4\frac{49}{50}\right\}$

5. a) Yes, the transformations have been applied in the correct order.

- b) No, the transformations have not been applied in the correct order.

- c) Yes, the transformations have been applied in the correct order.