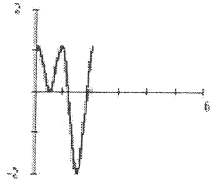
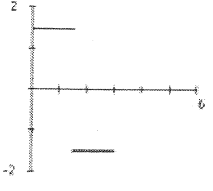
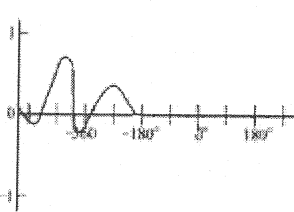


Unit Review - Answers

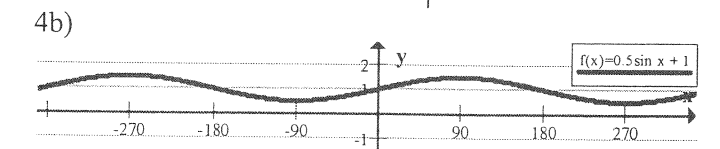
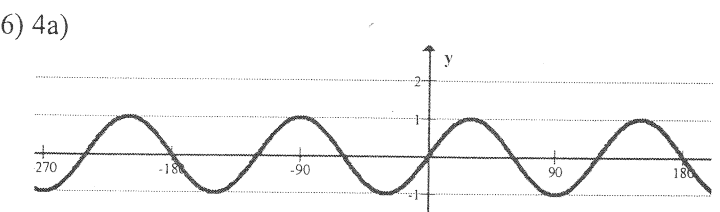
Supplementary problem Answers:

<p>1) i) a) highlighted portion may vary</p>  <p>Period = 2              Amplitude = 1.5              Axis of curve: <math>y = -0.5</math>              Max. value = 1              Min. value = -2  <math>f(7) = f(7 - 2 \cdot 3)</math>  <math>= f(7 - 6)</math>  <math>= f(1)</math>  <math>= 1</math></p>	<p>ii) a) highlighted portion may vary</p>  <p>Period = 3              Amplitude = 1.5              Axis of curve: <math>y = 0</math>              Max. value = 1.5              Min. value = -1.5  <math>f(33) = f(33 - 3 \cdot 11)</math>  <math>= f(33 - 33)</math>  <math>= f(0)</math>  <math>= 1.5</math></p>	<p>iii) a) highlighted portion may vary</p>  <p>Period = <math>360^\circ</math>              Amplitude = 0.5              Axis of curve: <math>y = 0.3</math>              Max. value = 0.8              Min. value = -0.2  <math>f(-720^\circ) = f(-720^\circ + 360^\circ)</math>  <math>= f(-360^\circ)</math>  <math>= -0.15</math></p>	<p>iv)              Not periodic    <math>f(1000)</math> value cannot be predicted</p>
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- 2) a) The pendulum swings from a point to the right of vertical, through the vertical position to a point on the left of vertical. It then swings back to its starting point.  
 b) When the string is plucked it moves away from rest, then back through rest to the other side. This vibration, over a short period of time, could be considered as periodic although it will eventually stop!  
 c) Ice cream consumption follows a regular pattern as it increases from a low in the cooler months to a high in the warmer months and then decreases as the temperature cools. This cycle repeats each year.

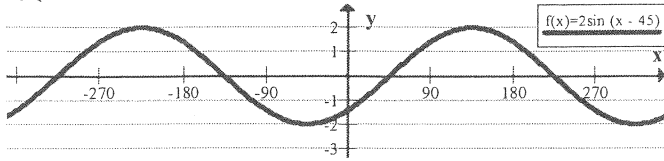
3) Look back at the table created in class on Friday May ~~16~~<sup>16<sup>th</sup></sup> / 17<sup>th</sup>

- 4) a) horizontal compression, factor is 3  
 b) vertical compression, factor is 2; vertical translation up 1 unit  
 c) vertical stretch, factor is 2; horizontal translation right by  $45^\circ$
- 5) a) horizontal compression, factor is 1.5  
 b) horizontal compression, factor is 2; Phase Shift =  $45^\circ$  (horizontal translation right)  
 c) reflection in x-axis; vertical stretch, factor is 2; horizontal compression, factor is 3; Phase Shift =  $-60^\circ$  (horizontal translation left); vertical translation up 2 units

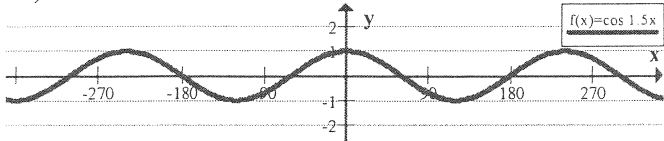


4c)

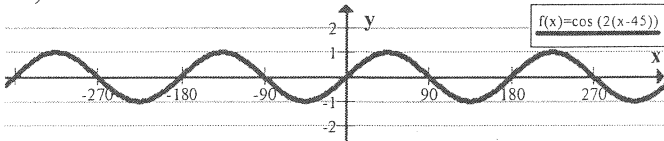
4c)



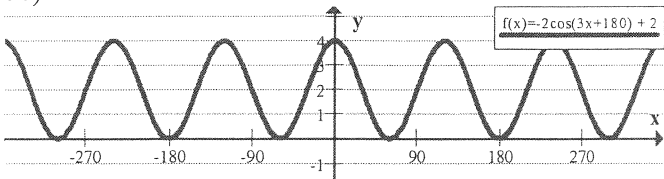
5a)



5b)



5c)



7) a)  $y = 5 \cos[2(x + 90)]^\circ + 1$

b)  $y = 4 \sin(3x) - 1$  or  $y = 4 \cos[3(x - 30^\circ)] - 1$

c)  $y = -2 \sin(2x - 45^\circ) - 3$

8) a)  $A(3, 6)$  represents that at 3 A.M. the depth of water is 6 m

b) 9 m

c) 8 A.M. to 9 A.M. then 3 P.M. to 7 P.M. therefore 5 hours per day.

9) a)  $y = 9.5 \sin[36(x - 2.5)]^\circ + 10.7$  or  $y = 9.5 \sin[36(x + 7.5)]^\circ + 10.7$

b) Sketch the graph showing two complete cycles.

