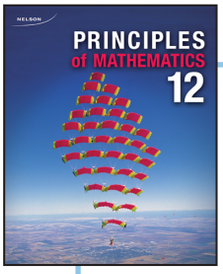

- If you have any difficulty with these solutions, please contact your teacher before continuing.

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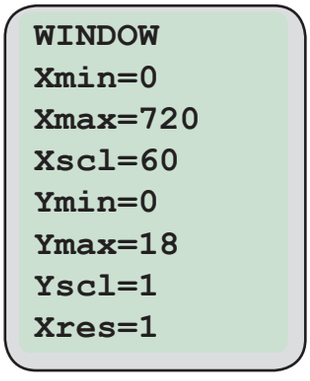
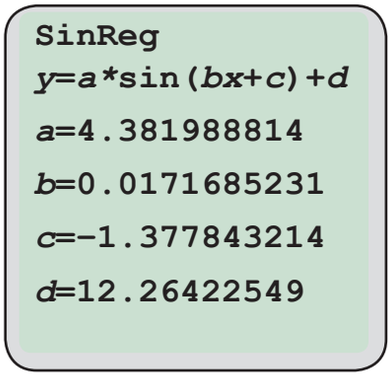
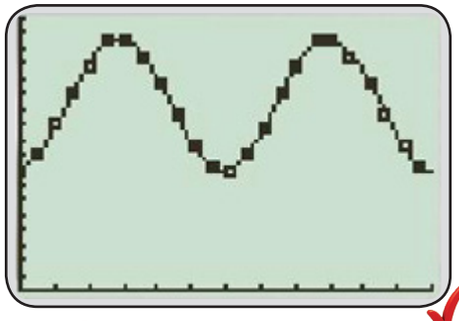
Because the regression is not stated in Example 1, you must plot the data and determine the sinusoidal regression equation.

L1 = *x*-values = Day Number *L2* = *y*-values = Length of Day (h)

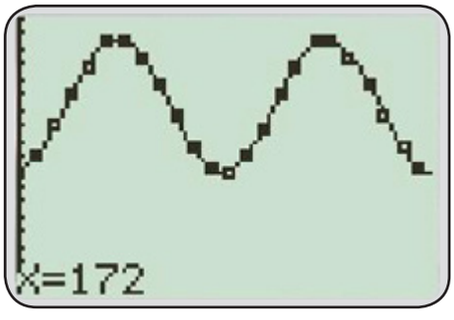


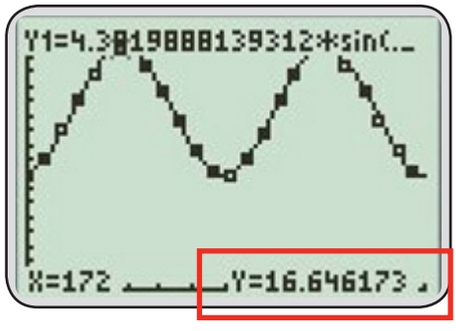




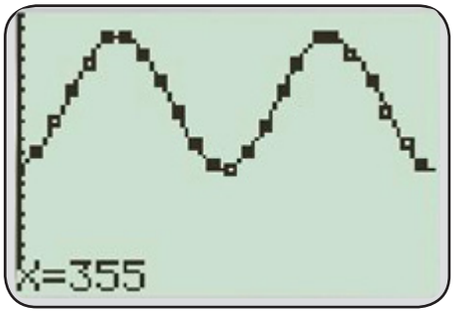
Regression Equation: $y = 4.382\sin(0.017x - 1.378) + 12.264$.

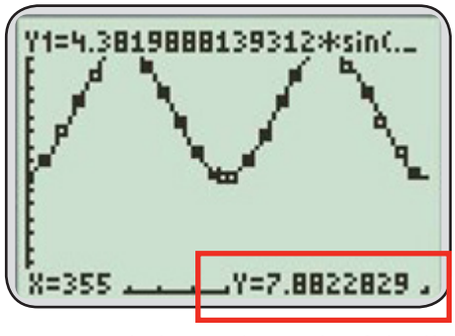
The summer solstice, June 21st, is on day 172; therefore, find *y* when $x = 172$.



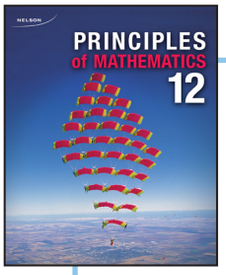


The winter solstice, December 21st, is on day 355; therefore, find *y* when $x = 355$.





There are 16.65 h of daylight on the summer solstice and 7.88 h of daylight on the winter solstice.



- If you have any difficulty with these solutions, please contact your teacher before continuing.

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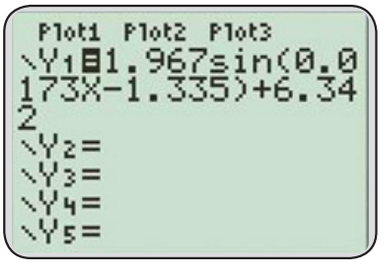
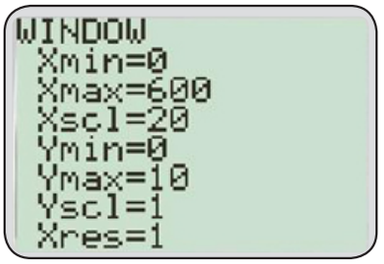
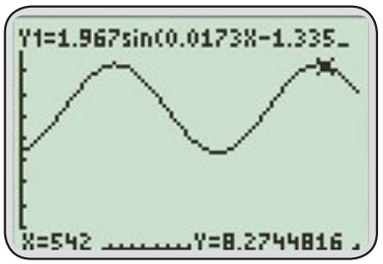
June 25 is day 542. Therefore, graph $y = 1.967 \sin(0.0173x - 1.335) + 6.342$ and find y when $x = 541$.







The time of sunset is about 8.27 or 8:16 p.m. standard time.

This is 9:16 p.m. daylight saving time. This is when the class should arrive.

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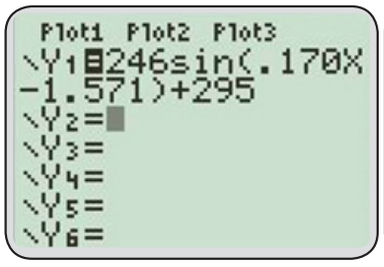
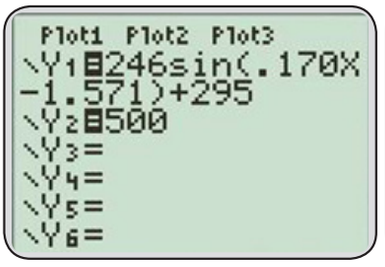
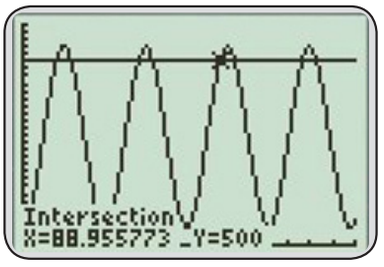
To find the time at a height of 500 feet, graph $y = 500$. Then, find the fifth intersection point of this line and the regression curve $y = 246\sin(0.170x - 1.571) + 295$.







Jordy was at a height of 500 feet for the fifth time at 89.0 minutes.

This is 1 hour and 29 minutes.