If the data points on a scatter plot seem to follow a regular, periodic pattern of increasing and decreasing curves, then there may be a sinusoidal relationship between the independent and dependent variables.

If the points on a scatter plot show a sinusoidal trend, then graphing technology can be used to determine the equation of the sinusoidal regression function that models the data.

Example 1: The table shows the maximum altitude, in degrees, at which the Moon appeared in Edmonton from January 1 to February 29 in 2012. Use sinusoidal regression to determine the maximum altitude of the Moon on February 6 (Day 37) and on March 1 (Day 61).

Day	1	4	7	10	13	16	19
Altitude	47.3	56.5	57.0	51.4	36.8	48.1	13.1
Day	22	25	28	31	34	37	40
Altitude	17.9	31.2	45.4	55.4	57.5		39.0
Day	43	46	49	52	55	58	61
Altitude	22.8	13.6	16.8	29.1	43.4	54.2	

SinReg

$y = a\sin(bx+c)+d$

$y = 20.7\sin(0.23x - 0.0022) + 38.36$

$max = 38.36 + 20.7$

$= 59.06$

Example 2: The table below shows what percent of the Moon was illuminated during January and February of 2012. Use sinusoidal regression to determine what percent of the Moon was illuminated on January 15 (Day 15) and March 4 (Day 65).

Day	1	5	10	15	20	25	30
Illumination	57.8	90.5	98.7		8.2	7.5	49.0
Day	35	40	45	50	55	60	65
Illumination	91.8	97.1	51.9	5.3	8.7	50.2	

$y = 50.5\sin(0.21x - 0.100) + 51.0$

$= 50.5\sin(0.21(15) - 0.1) + 51$

$= 55.6$

$= 50.5\sin(0.21(65) - 0.1) + 51$

$= 93.0$