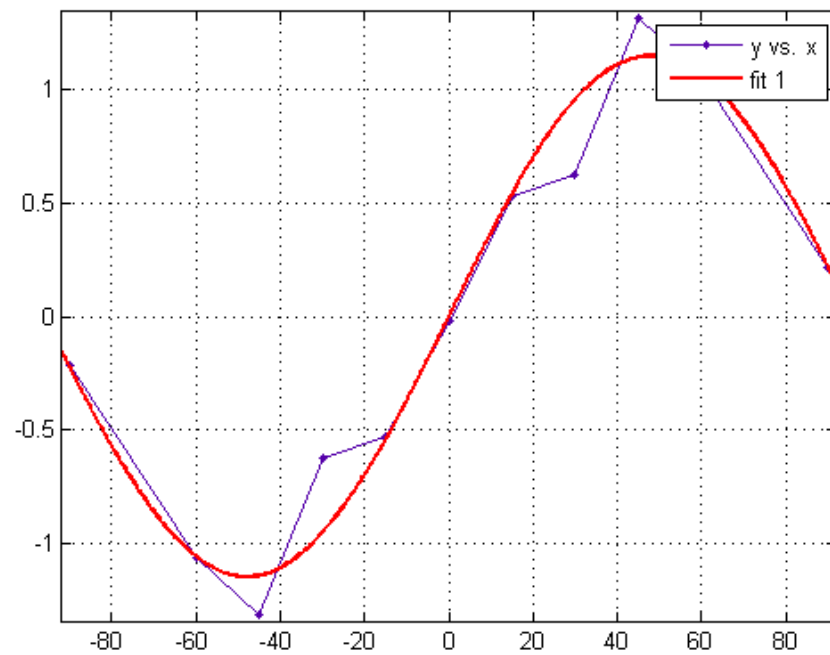


# **LAMPIRAN**

## LAMPIRAN 1. Pengolahan data $C_L$ dan $C_D$ pada *Matlab*

KECEPATAN 2 m/s

$C_{L1}$



General model Sin1:

$$f(x) = a1 \cdot \sin(b1 \cdot x + c1)$$

where x is normalized by mean 0 and std 63.05

Coefficients (with 95% confidence bounds):

$$a1 = 1.142 \quad (1.118, 1.167)$$

$$b1 = 2.065 \quad (2.049, 2.08)$$

$$c1 = -0.004143 \quad (-0.01807, 0.009787)$$

Goodness of fit:

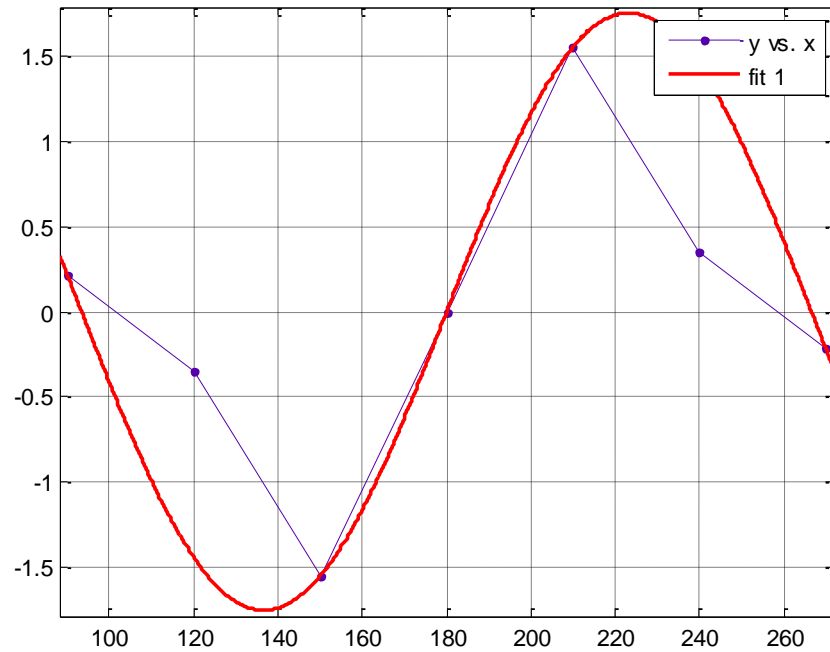
SSE: 0.0006275

R-square: 0.9998

Adjusted R-square: 0.9997

RMSE: 0.01253

C<sub>L2</sub>



General model Sin1:

$$f(x) = a1 * \sin(b1 * x + c1)$$

where x is normalized by mean 180 and std 67.08

Coefficients (with 95% confidence bounds):

$$a1 = 1.749 (1.749, 1.749)$$

$$b1 = 2.435 (2.435, 2.435)$$

$$c1 = -2.456e-006 (-1.403e-005, 9.116e-006)$$

Goodness of fit:

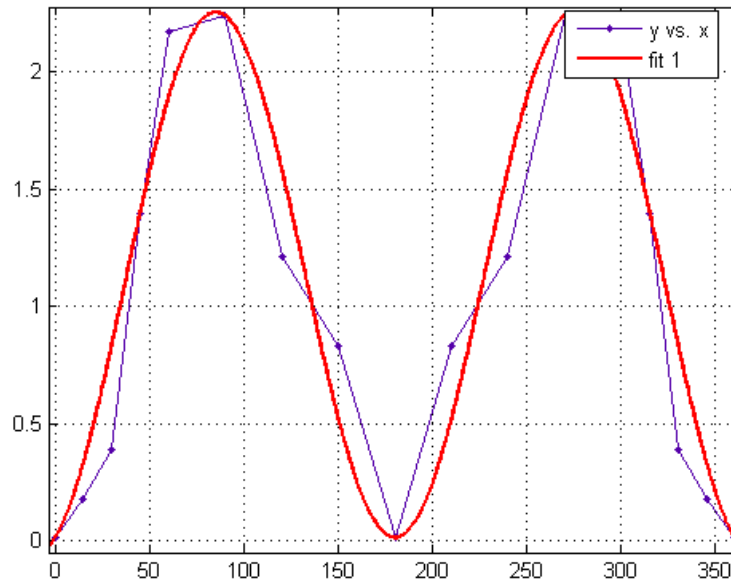
SSE: 1.504e-010

R-square: 1

Adjusted R-square: 1

RMSE: 8.673e-006

$C_D$



General model Sin2:

$$f(x) = a1*\sin(b1*x+c1) + a2*\sin(b2*x+c2)$$

where x is normalized by mean 180 and std 139.9

Coefficients (with 95% confidence bounds):

$$a1 = 1.145 (1.145, 1.145)$$

$$b1 = 0.2695 (0.2693, 0.2698)$$

$$c1 = 1.571 (1.571, 1.571)$$

$$a2 = 1.13 (1.13, 1.13)$$

$$b2 = 4.611 (4.611, 4.611)$$

$$c2 = -1.571 (-1.571, -1.571)$$

Goodness of fit:

SSE: 4.164e-011

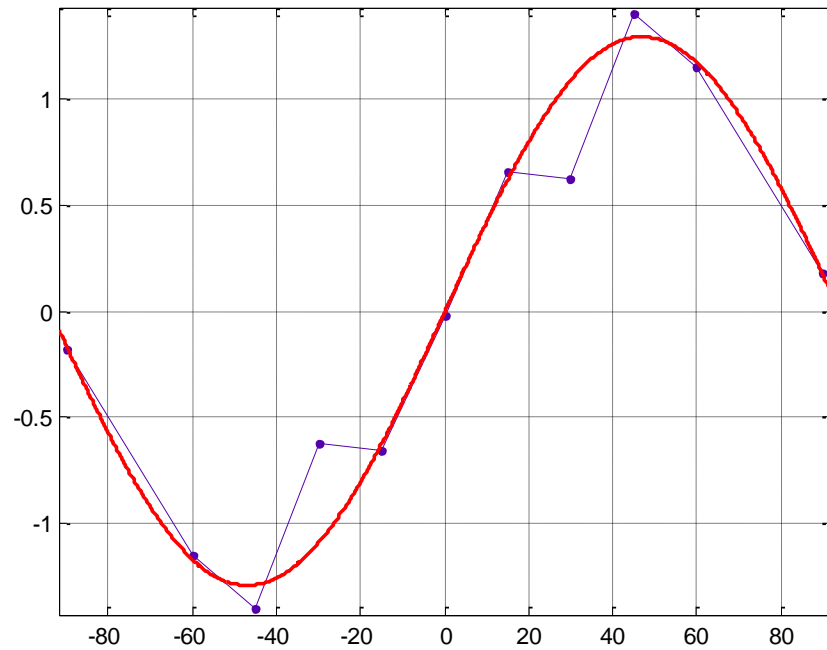
R-square: 1

Adjusted R-square: 1

RMSE: 6.453e-006

KECEPATAN 2.5 m/s

$C_{L1}$



General model Sin1:

$$f(x) = a1 * \sin(b1 * x + c1)$$

where x is normalized by mean 0 and std 63.05

Coefficients (with 95% confidence bounds):

$$a1 = 1.29 \quad (1.232, 1.348)$$

$$b1 = 2.11 \quad (2.079, 2.141)$$

$$c1 = -0.003699 \quad (-0.03224, 0.02484)$$

Goodness of fit:

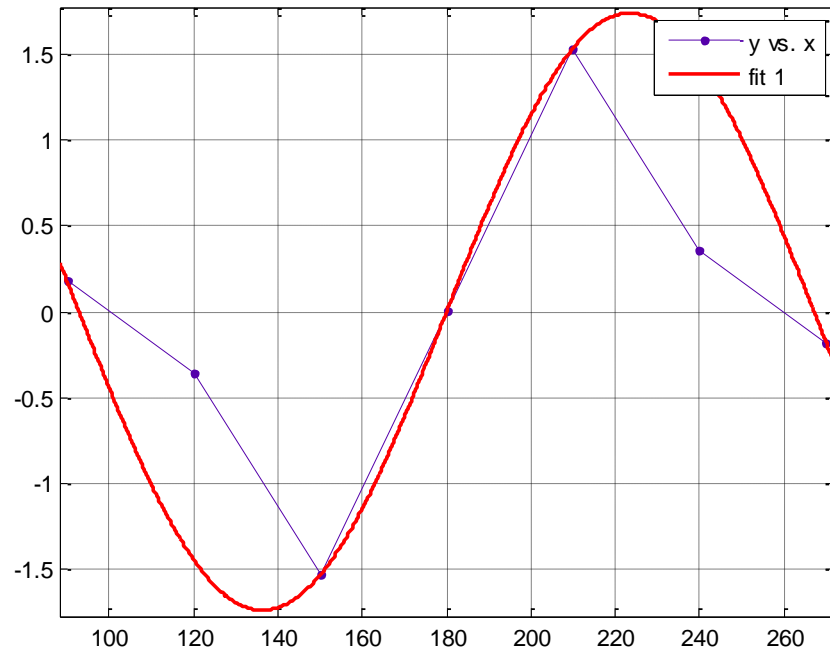
SSE: 0.00342

R-square: 0.999

Adjusted R-square: 0.9986

RMSE: 0.02924

C<sub>L2</sub>



General model Sin1:

$$f(x) = a1 * \sin(b1 * x + c1)$$

where x is normalized by mean 180 and std 67.08

Coefficients (with 95% confidence bounds):

$$a1 = 1.745 (1.745, 1.745)$$

$$b1 = 2.417 (2.417, 2.417)$$

$$c1 = 1.392e-006 (-5.197e-006, 7.98e-006)$$

Goodness of fit:

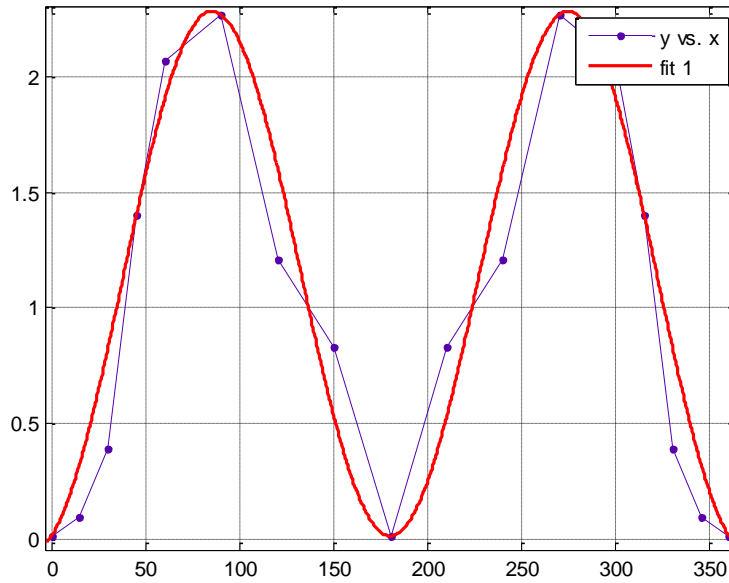
SSE: 4.888e-011

R-square: 1

Adjusted R-square: 1

RMSE: 4.943e-006

$C_D$



General model Sin2:

$$f(x) = a_1 \sin(b_1 x + c_1) + a_2 \sin(b_2 x + c_2)$$

where x is normalized by mean 180 and std 139.9

Coefficients (with 95% confidence bounds):

$$a_1 = 1.157 (1.157, 1.157)$$

$$b_1 = 0.2497 (0.249, 0.2504)$$

$$c_1 = 1.571 (1.57, 1.571)$$

$$a_2 = 1.143 (1.143, 1.143)$$

$$b_2 = 4.631 (4.63, 4.631)$$

$$c_2 = -1.571 (-1.571, -1.571)$$

Goodness of fit:

SSE: 3.889e-010

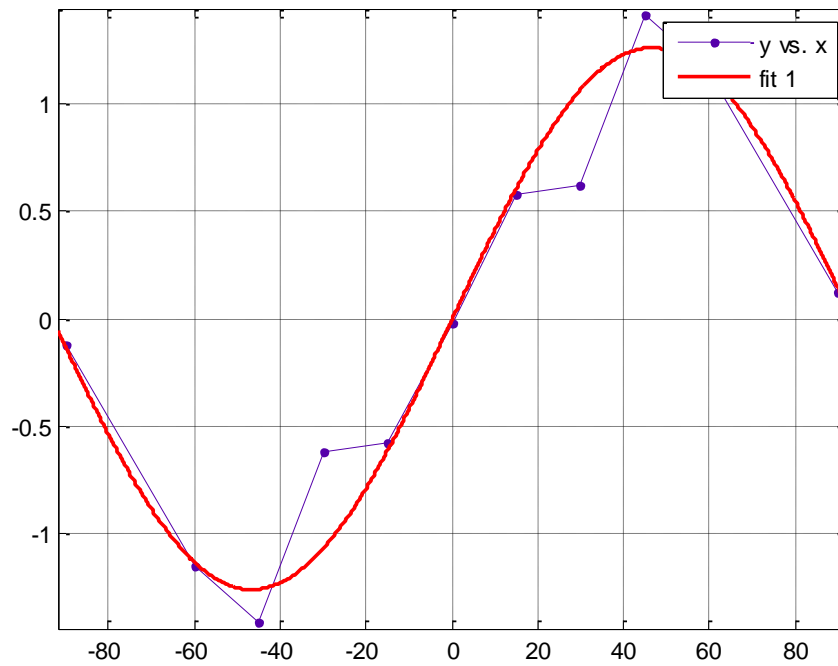
R-square: 1

Adjusted R-square: 1

RMSE: 1.972e-005

KECEPATAN 3m/s

$C_{L1}$



General model Sin1:

$$f(x) = a1 * \sin(b1 * x + c1)$$

where x is normalized by mean 0 and std 63.05

Coefficients (with 95% confidence bounds):

$$a1 = 1.265 (1.2, 1.331)$$

$$b1 = 2.124 (2.089, 2.16)$$

$$c1 = -0.003816 (-0.03634, 0.02871)$$

Goodness of fit:

SSE: 0.004296

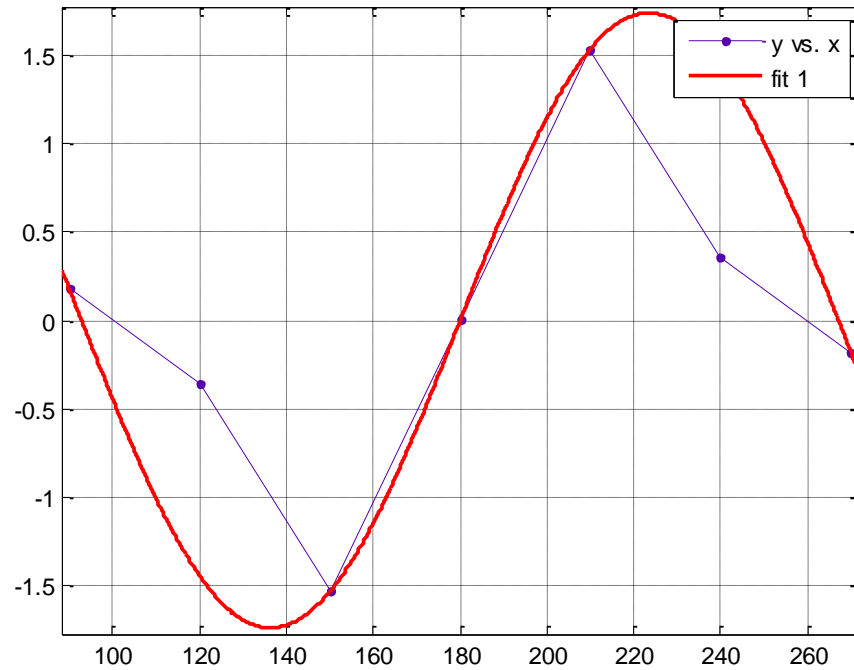
R-square: 0.9987

Adjusted R-square: 0.9981

RMSE: 0.03277



C<sub>L2</sub>



General model Sin1:

$$f(x) = a1 * \sin(b1 * x + c1)$$

where x is normalized by mean 180 and std 67.08

Coefficients (with 95% confidence bounds):

$$a1 = 1.745 (1.745, 1.745)$$

$$b1 = 2.417 (2.417, 2.417)$$

$$c1 = 1.392e-006 (-5.197e-006, 7.98e-006)$$

Goodness of fit:

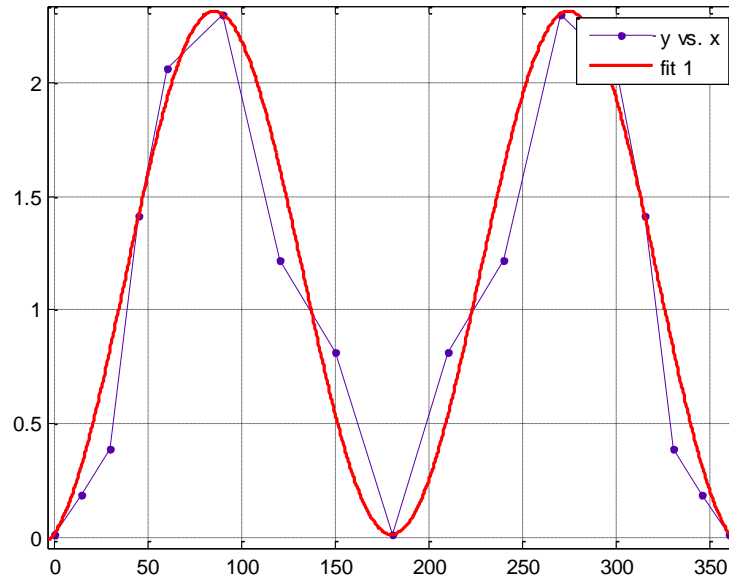
SSE: 4.888e-011

R-square: 1

Adjusted R-square: 1

RMSE: 4.943e-006

$C_D$



General model Sin2:

$$f(x) = a_1 \cdot \sin(b_1 \cdot x + c_1) + a_2 \cdot \sin(b_2 \cdot x + c_2)$$

where x is normalized by mean 180 and std 139.9

Coefficients (with 95% confidence bounds):

$$a_1 = 1.171 \quad (1.171, 1.171)$$

$$b_1 = 0.2409 \quad (0.2409, 0.2409)$$

$$c_1 = 1.571 \quad (1.571, 1.571)$$

$$a_2 = 1.157 \quad (1.157, 1.157)$$

$$b_2 = 4.639 \quad (4.639, 4.639)$$

$$c_2 = -1.571 \quad (-1.571, -1.571)$$

Goodness of fit:

SSE: 6.726e-016

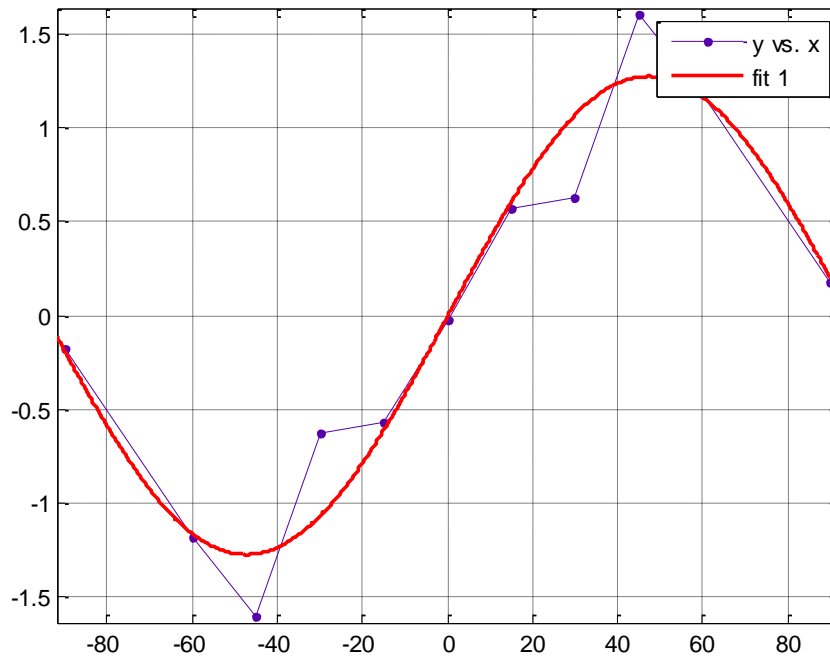
R-square: 1

Adjusted R-square: 1

RMSE: 2.593e-008

KECEPATAN 3.5 m/s

$C_{L1}$



General model Sin1:

$$f(x) = a1 * \sin(b1 * x + c1)$$

where x is normalized by mean 0 and std 63.05

Coefficients (with 95% confidence bounds):

$$a1 = 1.277 (1.204, 1.351)$$

$$b1 = 2.093 (2.053, 2.134)$$

$$c1 = -0.003872 (-0.04069, 0.03295)$$

Goodness of fit:

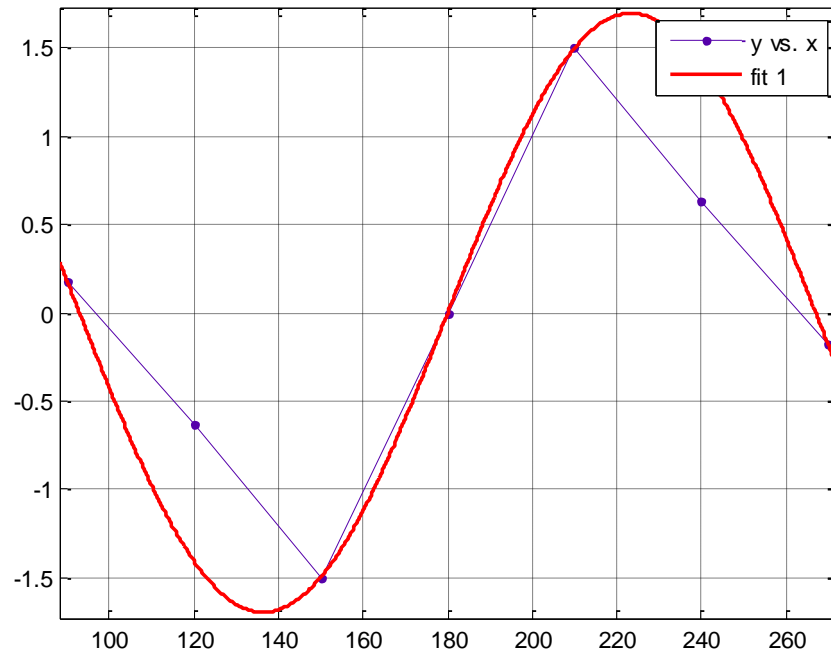
SSE: 0.005547

R-square: 0.9984

Adjusted R-square: 0.9977

RMSE: 0.03724

C<sub>L2</sub>



General model Sin1:

$$f(x) = a1 * \sin(b1 * x + c1)$$

where x is normalized by mean 180 and std 67.08

Coefficients (with 95% confidence bounds):

$$a1 = 1.698 (1.698, 1.698)$$

$$b1 = 2.421 (2.421, 2.421)$$

$$c1 = 6.261e-018 (-3.456e-013, 3.456e-013)$$

Goodness of fit:

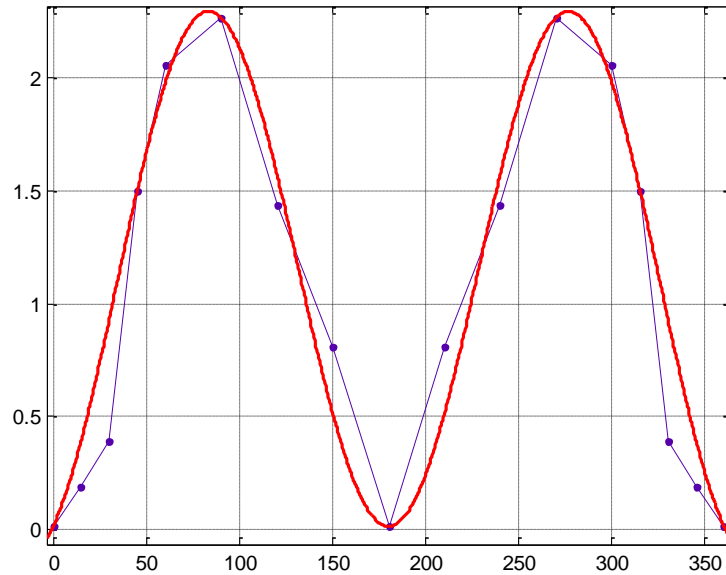
SSE: 1.272e-025

R-square: 1

Adjusted R-square: 1

RMSE: 2.522e-013

**CD**



General model Sin2:

$$f(x) = a1*\sin(b1*x+c1) + a2*\sin(b2*x+c2)$$

where x is normalized by mean 180 and std 139.9

Coefficients (with 95% confidence bounds):

$$a1 = 1.173 (1.173, 1.173)$$

$$b1 = 0.358 (0.358, 0.358)$$

$$c1 = 1.571 (1.571, 1.571)$$

$$a2 = 1.159 (1.159, 1.159)$$

$$b2 = 4.522 (4.522, 4.522)$$

$$c2 = -1.571 (-1.571, -1.571)$$

Goodness of fit:

SSE: 1.79e-016

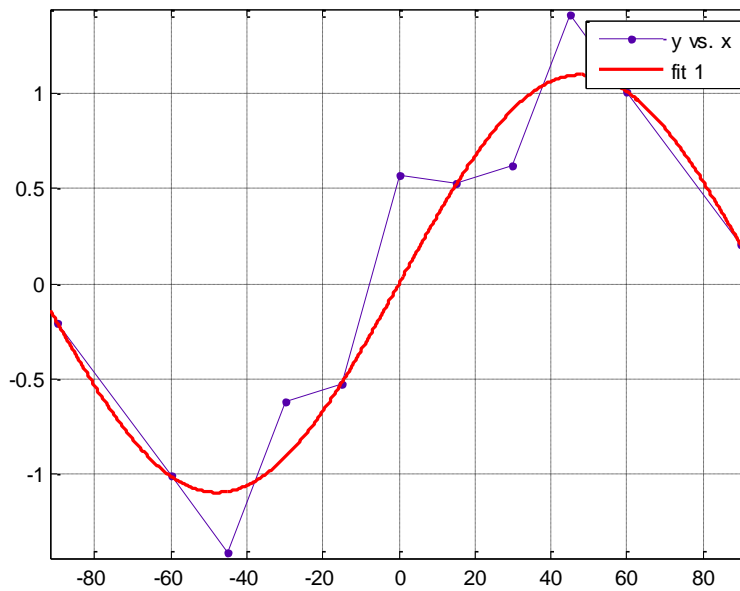
R-square: 1

Adjusted R-square: 1

RMSE: 1.338e-008

KECEPATAN 4 m/s

$C_{L1}$



General model Sin1:

$$f(x) = a1 * \sin(b1 * x + c1)$$

where x is normalized by mean 0 and std 69.07

Coefficients (with 95% confidence bounds):

$$a1 = 1.102 \quad (1.085, 1.119)$$

$$b1 = 2.27 \quad (2.258, 2.282)$$

$$c1 = 2.074e-017 \quad (-0.01106, 0.01106)$$

Goodness of fit:

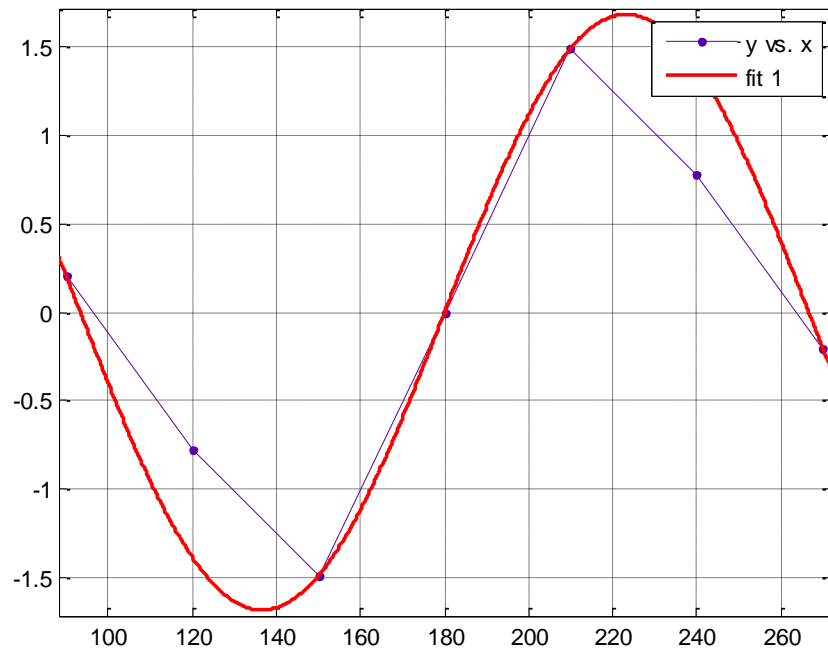
SSE: 0.0001668

R-square: 0.9999

Adjusted R-square: 0.9999

RMSE: 0.007456

C<sub>L2</sub>



General model Sin1:

$$f(x) = a1 * \sin(b1 * x + c1)$$

where x is normalized by mean 180 and std 67.08

Coefficients (with 95% confidence bounds):

$$a1 = 1.683 (1.683, 1.683)$$

$$b1 = 2.432 (2.432, 2.432)$$

$$c1 = 4.297e-018 (-9.608e-013, 9.608e-013)$$

Goodness of fit:

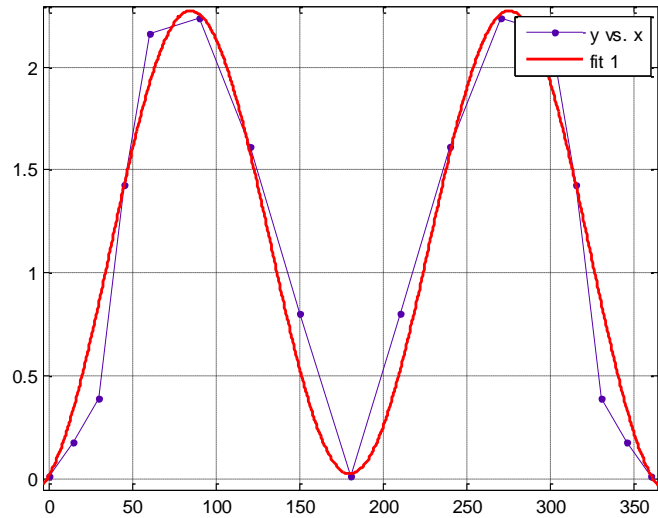
SSE: 9.606e-025

R-square: 1

Adjusted R-square: 1

RMSE: 6.93e-013

$C_D$



General model Sin2:

$$f(x) = a_1 \cdot \sin(b_1 \cdot x + c_1) + a_2 \cdot \sin(b_2 \cdot x + c_2)$$

where  $x$  is normalized by mean 180 and std 124.8

Coefficients (with 95% confidence bounds):

$$a_1 = 1.161 \quad (1.121, 1.201)$$

$$b_1 = 0.27 \quad (0.1295, 0.4104)$$

$$c_1 = 1.571 \quad (1.491, 1.65)$$

$$a_2 = 1.136 \quad (1.103, 1.169)$$

$$b_2 = 4.1 \quad (4.051, 4.148)$$

$$c_2 = -1.571 \quad (-1.602, -1.54)$$

Goodness of fit:

SSE: 0.001246

R-square: 0.9998

Adjusted R-square: 0.9995

RMSE: 0.02038