



Solve for best fit with calculation of coefficient of determination the following problems:

Prob. #1

The values of $\sin x$ are given below for different values of x . Find the value of $\sin 42^\circ$.

x	40°	45°	50°	55°	60°
$y = \sin x$	0.64279	0.70711	0.76604	0.81915	0.86603

Prob. #2

From the following table estimate the number of students who obtained marks in the examination between 50 and 55.

Marks	35–45	45–55	55–65	65–75	75–85
No. of students	31	42	51	35	31

Prob. #3

Using Newton's forward interpolation formula find the value of $\sin 52^\circ$ from the following data. Estimate the error.

x	40°	45°	50°	55°	60°
$y = \sin x$	0.64279	0.70711	0.76604	0.81915	0.86603

Prob. #4

Using Newton's divided difference interpolation, find $y(10)$ given that $y(5) = 12$, $y(6) = 13$, $y(9) = 14$, $y(11) = 16$.

Prob. #5

Find $f(8)$ by Newton's divided difference formula, for the data

x	4	5	7	10	11	13
$f(x)$	48	100	294	900	1210	2028

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Prob. #6

The Newton forward divided-difference formula is used to approximate $f(0.3)$ given the following data.

x	0.0	0.2	0.4	0.6
$f(x)$	15.0	21.0	30.0	51.0



Prob. #7

Use Stirling's interpolation formula to find $y_{3.25}$ from the following data:

x	2	2.5	3.0	3.5	4.0
y = f(x)	49225	48316	47236	45926	44306

Prob. #8

Using Newton's backward formula, find the polynomial of degree 3 passing through (3,6), (4, 24), (5, 60) and (6, 120).

Prob. #9

Find $y(35)$, by using the given table

x	20	30	40	50
y	512	439	346	243

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