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/*
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A program to find out the 1st and second derivative of a function  $\sin(x)$  using 3 point formula.
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This program is created by Mohammad Sazzad Hossain
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*/
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# include <iostream.h>
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# include <math.h>
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double f (double x){return (sin (x));}
```

```
double fstderivative (double x, double h){return ((f (x + h) - f (x - h)) / (2 * h));}
```

```
double senderivative (double x, double h){
```

```
return ((f (x + h) - 2 * f(x) + f (x - h)) / (h * h));
```

```
}
```

```
int main (){
```

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double rad, x;
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```
double h = .000001, Pi = 4 * atan (1);
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```
cout << "Input the point in which you want to find the derivative (in degree): " ;
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```
cin >> x;
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rad = x * (Pi / 180);
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```
cout << "The 1st derivative is: " << fstderivative (rad, h) << endl;
```

```
cout << "The 2nd derivative is: " << senderivative (rad, h) << endl;
```

```
cout << "At the point: " << rad << endl;
```

```
return 0;
```

```
}
```