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funcion handles

```
y1 =@(x) x.^3 + 4*x -15;
y2 =@(x) (x.^2)*cos(x);
y3 =@(x) sin(sqrt(x)/2)/x;
```

step sizes

```
h1 = 0.25;
h2 = 0.1;
h3 = 0.2;
```

evaluating values

```
x1 = 0;
x2 = 0.4;
x3 = 1;
```

Analytical function handles

```
dy1An =@(x) 3*x^2 + 4;
dy2An =@(x) 2*x*cos(x) - x^2*sin(x);
dy3An =@(x) cos(x^(1/2)/2)/(4*x^(3/2)) - sin(x^(1/2)/2)/x^2;
```

Central difference

we know the central difference for O(h4) is f'(x) = -f(x+2h)+8f(x+h)-8f(x-h)+f(x-2h) / 12h + e(f,h);

```
Y1 = centraldifference(x1,y1,h1)
Y2 = centraldifference(x2,y2,h2)
Y3 = centraldifference(x3,y3,h3)


Y1analy = dy1An(x1)
Y2analy = dy2An(x2)
Y3analy = dy3An(x3)
```

function def

```
function yeval = centraldifference(x,f,h)
```

```
    yeval = (-f(x+2*h)+8*f(x+h)-8*f(x-h)+f(x-2*h)) / (12*h);
end
```

```
Y1 =

     4
```

```
Y2 =

    0.6745
```

```
Y3 =

   -0.2591
```

```
Y1analy =

     4
```

```
Y2analy =

    0.6745
```

```
Y3analy =

   -0.2600
```

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