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# Problem 1

```
syms f(x)
f(x) = exp(sin(x)-cos(5*x))/(sin(x/2))^4;

% Problem 1.a

diff(f(x),x)

% Problem 1.b

int(f(x), x, pi/2, pi)
vpaintegral(f(x), x, pi/2, pi)

ans =

(exp(sin(x) - cos(5*x))*(5*sin(5*x) + cos(x)))/sin(x/2)^4 - (2*cos(x)/
2)*exp(sin(x) - cos(5*x))/sin(x/2)^5

ans =

int(exp(sin(x) - cos(5*x))/sin(x/2)^4, x, pi/2, pi)

ans =

9.38968
```

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## Problem 2

```
v=[5 7];  
A=[2 3; 5 6];
```

```
A^5  
v*A  
dot(v,v)
```

```
ans =
```

```
    11042    14043  
    23405    29766
```

```
ans =
```

```
    45    57
```

```
ans =
```

```
    74
```

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