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```
close all
clear all
clc

%Ben Ridenbaugh
%EGR 1101
%HW 7
```

# Chapter 9

# Problem 16

# a

```
quad('(.5.*x.^3)./(1+2.*sqrt(x))',2,10)
```

```
ans =

  190.2484
```

## b

```
quad('(.5+(cos(1.2.*x))./((x+2).^2)',0,9)
```

```
ans =

    0.2802
```

# Problem 17

## a

```
quad('exp(x)./(x.^3)',1,8)
```

```
ans =

   12.3621
```

## b

```
quad('cos(x).*exp(sqrt(x))',0,4*pi)
```

```
ans =

    3.5935
```

# Extra Problem 1

```
n1=[5:50/10:50];
estimated_area1=sum((50/10)*(50-sqrt(2500-(n1-50).^2)))
n2=[50/100:50/100:50];
estimated_area2=sum((50/100)*(50-sqrt(2500-(n2-50).^2)))
n3=[50/1000:50/1000:50];
estimated_area3=sum((50/1000)*(50-sqrt(2500-(n3-50).^2)))
actual_area=quad('50-sqrt(2500-(x-50).^2)',0,50)
difference1=(estimated_area1-actual_area)
difference2=(estimated_area2-actual_area)
difference3=(estimated_area3-actual_area)
```

```
estimated_area1 =

  434.6760
```

```
estimated_area2 =

  524.7394


estimated_area3 =

  535.2778


actual_area =

  536.5046


difference1 =

 -101.8286


difference2 =

  -11.7652


difference3 =

   -1.2268
```

# Chapter 11

# Problem 1

```
syms x
s1=x^2*(x-6)+4*(3*x-2);
s2=(x+2)^2-8*x;
```

# a

```
simplify(s1*s2)


ans =

(x - 2)^5
```

# b

```
simplify(s1/s2)
```

```
ans =

x - 2
```

## c

```
simplify(s1+s2)
```

```
ans =

(x - 1)*(x - 2)^2
```

## d

```
x=5;
subs(s1+s2)
```

```
ans =

36
```

# Problem 4

```
syms x
```

## a

```
v=[-2,-.5,2,4.5];
polynomial=expand(prod(x-v))
```

```
polynomial =

x^4 - 4*x^3 - (25*x^2)/4 + 16*x + 9
```

## b

```
factor(x^6-6.5*x^5-58*x^4+167.5*x^3+728*x^2-890*x-1400)
```

```
ans =

[ 1/2, x - 2, 2*x + 7, x - 4, x + 5, x - 10, x + 1]
```

# Problem 16

## a

```
int(x^3/sqrt(1-x^2),x)
```

```
ans =

-((1 - x^2)^(1/2)*(x^2 + 2))/3
```

## b

```
int(x^2*cos(x),x)
```

```
ans =

sin(x)*(x^2 - 2) + 2*x*cos(x)
```

# Problem 21

```
syms R
y=4*R/3*pi;
yc=int(y,R)/int(1,R)
```

```
yc =

(2*pi*R)/3
```

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