Chapter 1-HW

Table of Contents

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ENGI-111-01

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Problem 1

```
x = 10
y = 3
% a.
u = x+y
% b.
v = x*y
% c.
w = x/y
% d.
z = sin(x)
% e.
r = 8*sin(y)
% f.
s = 5*sin(2*y)
```

```
x =

    10
```

```
y =

     3
```

```
u =

    13
```

```
v =

    30


w =

    3.3333


z =

   -0.5440


r =

    1.1290


s =

   -1.3971
```

Problem 3

```
x = 5
y = 2
% a.
(1-1/x^5)^-1
% b.
3*pi*x^2
% c.
3*y/(4*x-8)
% d.
4*(y-5)/(3*x-6)


x =

     5


y =

     2


ans =

    1.0003
```

```
ans =

  235.6194


ans =

    0.5000


ans =

   -1.3333
```

Problem 5

```
a = 1.12
b = 2.34
c = 0.72
d = 0.81
f = 19.83
x = 1+(a/b)+(c/f^2)
s = (b-a)/(d-c)
r = 1/(1/a+1/b+1/c+1/d)
y = a*b*1/c*f^2/2


a =

    1.1200


b =

    2.3400


c =

    0.7200


d =

    0.8100


f =

   19.8300
```

```
x =

    1.4805


s =

   13.5556


r =

    0.2536


y =

  715.6766
```

Problem 15

```
a = 6.49
b = 0.0562
R = 0.08206
T = 273.2
V = 22.41
n = 1
P = n*R*T/V
P = n*R*T/(V-(n*b))-(a*n^2)/V^2
% The molecular attractions is the main cause of the difference in the two
% pressure estimates, as the term that is a correction for molecular
% attractions in the van der Waals equation, an^2/V^2, using the given
% values equals about equals about 0.013, while the difference between the
% first term of the van der Waals equation with the term that is a
% correction for the volume of the molecules, nb, and the ideal gas law is
% about 0.0025.


a =

    6.4900


b =

    0.0562


R =
```

```
    0.0821

T =

  273.2000

V =

   22.4100

n =

     1

P =

    1.0004

P =

    0.9900
```

Problem 22

a.

```
exp(-2.1^3)+3.47*log(14)+287^(1/4)
% b.
3.4^7*log(14)+287^(1/4)
% c.
cos(4.12*pi/6)^2
% d.
cos(4.12*pi/6)^2
```

```
ans =

   13.2736

ans =

   1.3865e+04

ans =

    0.3062
```

```
ans =

    0.3062
```

Problem 26

```
roots([60,20,-15,30])
```

```
ans =

  -1.0381 + 0.0000i
   0.3524 + 0.5979i
   0.3524 - 0.5979i
```

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