In[1]:=
```
Remove ["Global`*"]
```

Remove: There are no symbols matching "Global`*".

Homework #3 problem 2 &5.

Problem 2

In[2]:=
```
Fx = Log[1 + x]
```

Out[2]= $\text{Log}[1 + x]$

In[3]:=
```
S0 = Normal[Series[Fx, {x, 2, 0}]]
```

Out[3]= $\text{Log}[3]$

In[4]:=
```
S1 = Normal[Series[Fx, {x, 2, 1}]]
```

Out[4]= $\frac{1}{3} \times (-2 + x) + \text{Log}[3]$

In[5]:=
```
S2 = Normal[Series[Fx, {x, 2, 2}]]
```

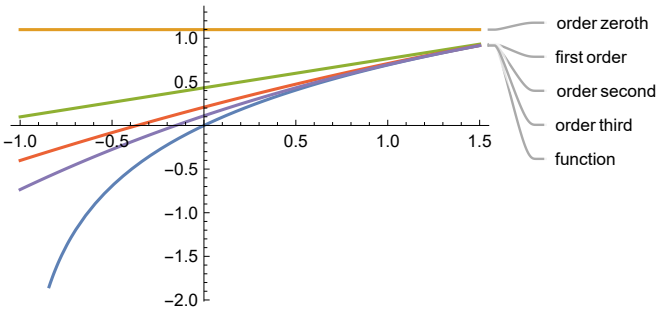
Out[5]= $\frac{1}{3} \times (-2 + x) - \frac{1}{18} (-2 + x)^2 + \text{Log}[3]$

In[6]:=
```
S3 = Normal[Series[Fx, {x, 2, 3}]]
```

Out[6]= $\frac{1}{3} \times (-2 + x) - \frac{1}{18} (-2 + x)^2 + \frac{1}{81} (-2 + x)^3 + \text{Log}[3]$

In[7]:=
```
Plot[{Fx, S0, S1, S2, S3}, {x, -1, 1.5},
 PlotLabels → {function, zeroth order, first order, second order, third order}]
```

Out[7]=



Problem 5

In[8]:=
```
x = 4 * Cos[((2 * Pi) * t)]
```

Out[8]= $4 \text{Cos}[2 \pi t]$

In[9]:=
```
x1 = 4 * Cos[((2 * Pi) * t) + (-Pi / 4)]
```

Out[9]= $4 \text{Cos}\left[\frac{\pi}{4} - 2 \pi t\right]$

In[10]:=
```
x2 = 4 * Cos[((2 * Pi) * t) + (Pi / 4)]
```

Out[10]=
$$4 \cos\left[\frac{\pi}{4} + 2\,\pi\,t\right]$$

In[11]:=
```
Plot[{x, x1, x2}, {t, 0, 2}]
```

Out[11]=