Phy482Hw9Prob4Wood

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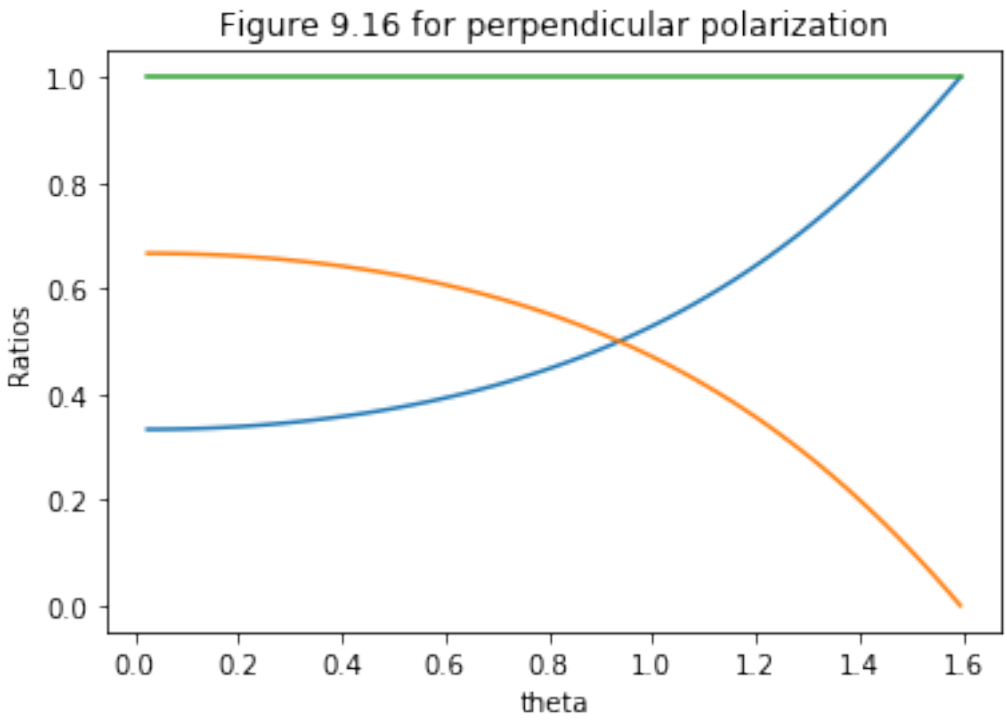
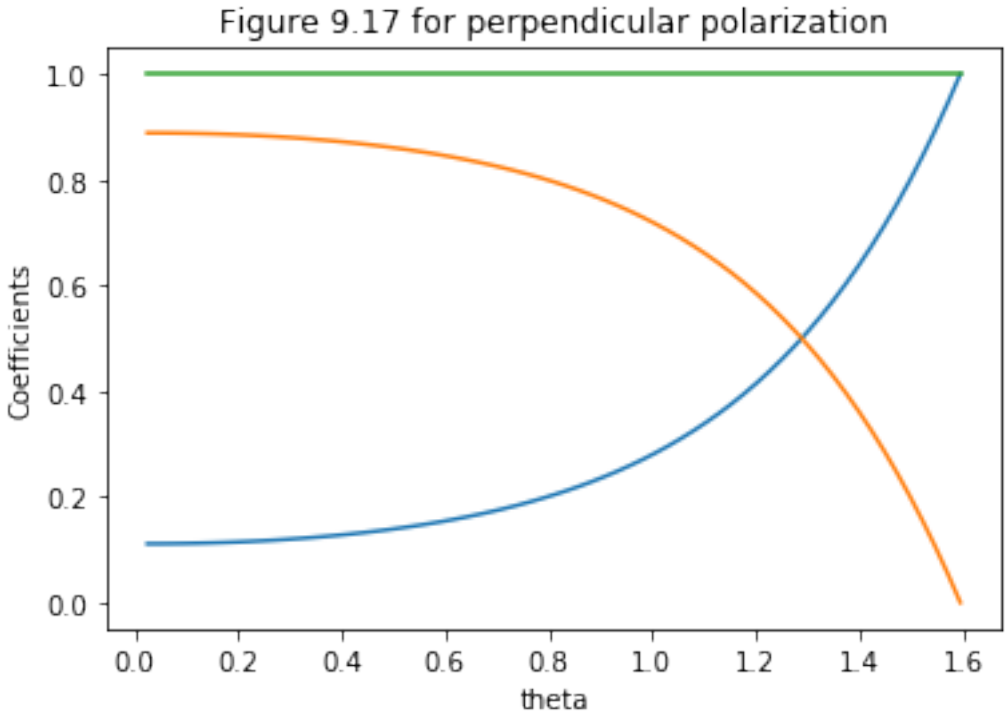
In [5]:
```
import matplotlib.pyplot as plt
from math import *
from math import pi
```

In [7]:
```
beta = 2

theta1 = 0
dtheta1 = pi/128
theta1f = pi/2

theta = []

ERdivEI = []
ETdivEI = []
Total = []

while theta1 < theta1f:
    alphabeta = sqrt(beta**2-(sin(theta1)**2))/cos(theta1) #alpha times beta - see wri
    erdivei = abs((1-alphabeta)/(1+alphabeta))
    etdivei = 2/(1+alphabeta)
    total = erdivei + etdivei
    theta1 = theta1 + dtheta1
    theta.append(theta1)
    Total.append(total)
    ERdivEI.append(erdivei)
    ETdivEI.append(etdivei)

plt.plot(theta, ERdivEI)
plt.plot(theta, ETdivEI)
plt.plot(theta, Total)
plt.xlabel('theta')
plt.ylabel('Ratios')
plt.title('Figure 9.16 for perpendicular polarization')
plt.show()
```



In [3]:
```
beta = 2

theta1 = 0
dtheta1 = pi/128
theta1f = pi/2

theta = []

R = []
T = []
Total = []

while theta1 < theta1f:
    alphabeta = sqrt(beta**2-(sin(theta1)**2))/cos(theta1)
    r = ((1-alphabeta)/(1+alphabeta))**2
    t = alphabeta*(2/(1+alphabeta))**2
    total = r + t
    theta1 = theta1 + dtheta1
    theta.append(theta1)
    Total.append(total)
    R.append(r)
    T.append(t)

plt.plot(theta, R)
```

```
plt.plot(theta, T)
plt.plot(theta, Total)
plt.xlabel('theta')
plt.ylabel('Coefficients')
plt.title('Figure 9.17 for perpendicular polarization')
plt.show()
```



There doesn't seem to be a Brewster's angle since the reflection coefficient is never zero. The graph shows the total which is always equal to 1 as it should be.