In [2]:
```
from sympy import *
```

In [3]:
```
#1.a
print((79 * (exp(1.29) + pow(11.1,2)))/(2026-pow(5.1,3)))
```

```
5.29251613828432
```

In [4]:
```
#1.b
print("Exact form:", (cos((11*pi)/12) * sec(75 * (pi/180))) + tan((7*pi)/12))
print("Approximate form:", (cos((11*pi)/12).evalf() * sec(75 * (pi/180))).evalf() + ta
```

```
Exact form: (-sqrt(6)/4 - sqrt(2)/4)/(-sqrt(2)/4 + sqrt(6)/4) - 2 - sqrt(3)
Approximate form: -7.46410161513775
```

In [5]:
```
#2.a 2.b
for i in range(0,6):
    x = input('''Evaluate F(x) where x is: ''')
    x = float(x)
    print("\n    Approximate form of F(",x,"):", (sqrt(pow(x,2) - 4)/(x-2)).evalf())
    print("\n")
```

```
Evaluate F(x) where x is: -10

    Approximate form of F( -10.0 ): -0.816496580927726


Evaluate F(x) where x is: -100

    Approximate form of F( -100.0 ): -0.980196058819607


Evaluate F(x) where x is: -1000000

    Approximate form of F( -1000000.0 ): -0.999998000002000


Evaluate F(x) where x is: 2.01

    Approximate form of F( 2.01 ): 20.0249843945009


Evaluate F(x) where x is: 2.0001

    Approximate form of F( 2.0001 ): 200.002499984149


Evaluate F(x) where x is: 2.000001

    Approximate form of F( 2.000001 ): 2000.00024988243
```

In [6]:
```
#2.c
print("As X approaches negative infinty F(x) approaches -1")
```

```
As X approaches negative infinty F(x) approaches -1
```

In [7]:
```
#2.d
print("As X approaches 2 from the right F(x) approaches positive infinity")
```

```
As X approaches 2 from the right F(x) approaches positive infinity
```

In [17]:

```python
#3.a

v = input('''Evaluate the funciton where Velocity is: ''')
a = input('''Evaluate the funciton where Alpha is: ''')
h = input('''Evaluate the funciton where Height is: ''')
d = input('''Evaluate the funciton where Distance is: ''')

v = float(v)
a = float(a)
h = float(h)
d = float(d)

a = a * (pi/180)

r = (((-16 * pow(d,2))/(pow(v, 2) * pow(cos(a),2))) + (tan(a) * (d + h))).evalf()

print("\n Given the parameters above \n the height of the object at ", d ," ft \n from

if r > 10:
    print("\n Given that the height ball is greater\n than that of the wall at that di
else:
    print("\n Given that the height ball is less\n than that of the wall at that dista
```

```
Evaluate the funciton where Velocity is: 130
Evaluate the funciton where Alpha is: 26
Evaluate the funciton where Height is: 3
Evaluate the funciton where Distance is: 409

 Given the parameters above
 the height of the object at  409.0  ft
 from the starting point is: 4.89913379099268 ft

 Given that the height ball is less
 than that of the wall at that distance
 we can conclude that the ball does not make it over the wall.
```

In [21]:

```python
#3.b

from sympy.solvers import solve
from sympy import Symbol

h = Symbol('h')

v = input('''Evaluate the funciton where Velocity is: ''')
a = input('''Evaluate the funciton where Alpha is: ''')

d = input('''Evaluate the funciton where Distance is: ''')

v = float(v)
a = float(a)

d = float(d)

a = a * (pi/180)

print("Given the parameters above the initial height is: ",solve(((-16 * pow(d,2))/(pc
```

```
Evaluate the funciton where Velocity is: 24
Evaluate the funciton where Alpha is: 54.2
Evaluate the funciton where Distance is: 15
Given the parameters above the initial height is:  [5.38570834666244]
```

In [ ]:

```

```

In [ ]:

```

```