

**6.00 Handout, Lecture 3**  
**(Not intended to make sense outside of lecture)**

```
#Find the cube root of a perfect cube
x = int(raw_input('Enter an integer: '))
ans = 0
while ans*ans*ans < abs(x):
    ans = ans + 1
    #print 'current guess =', ans
if ans*ans*ans != abs(x):
    print x, 'is not a perfect cube'
else:
    if x < 0:
        ans = -ans
    print 'Cube root of ' + str(x) + ' is ' + str(ans)
```

```
#Find the cube root of a perfect cube
x = int(raw_input('Enter an integer: '))
for ans in range(0, abs(x)+1):
    if ans**3 == abs(x):
        break
if ans**3 != abs(x):
    print x, 'is not a perfect cube'
else:
    if x < 0:
        ans = -ans
    print 'Cube root of ' + str(x) + ' is ' + str(ans)
```

```
x = 25
epsilon = 0.01
numGuesses = 0
ans = 0.0
while abs(ans**2 - x) >= epsilon and ans <= x:
    ans += 0.00001
    numGuesses += 1
print 'numGuesses =', numGuesses
if abs(ans**2 - x) >= epsilon:
    print 'Failed on square root of', x
else:
    print ans, 'is close to square root of', x
```

```
x = 12345
epsilon = 0.01
numGuesses = 0
low = 0.0
high = x
ans = (high + low)/2.0
while abs(ans**2 - x) >= epsilon and ans <= x:
    #print low, high, ans
    numGuesses += 1
    if ans**2 < x:
        low = ans
    else:
        high = ans
    ans = (high + low)/2.0
#print 'numGuesses =', numGuesses
print ans, 'is close to square root of', x
```

```
def withinEpsilon(x, y, epsilon):  
    """x, y, epsilon all ints or floats  
    returns true if x is within epsilon of y"""  
    return abs(x - y) <= epsilon  
  
if withinEpsilon(25, 26, 1):  
    print 'yes'  
else:  
    print 'no'  
  
if withinEpsilon(25, 26, 0.9):  
    print 'yes'  
else:  
    print 'no'
```

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