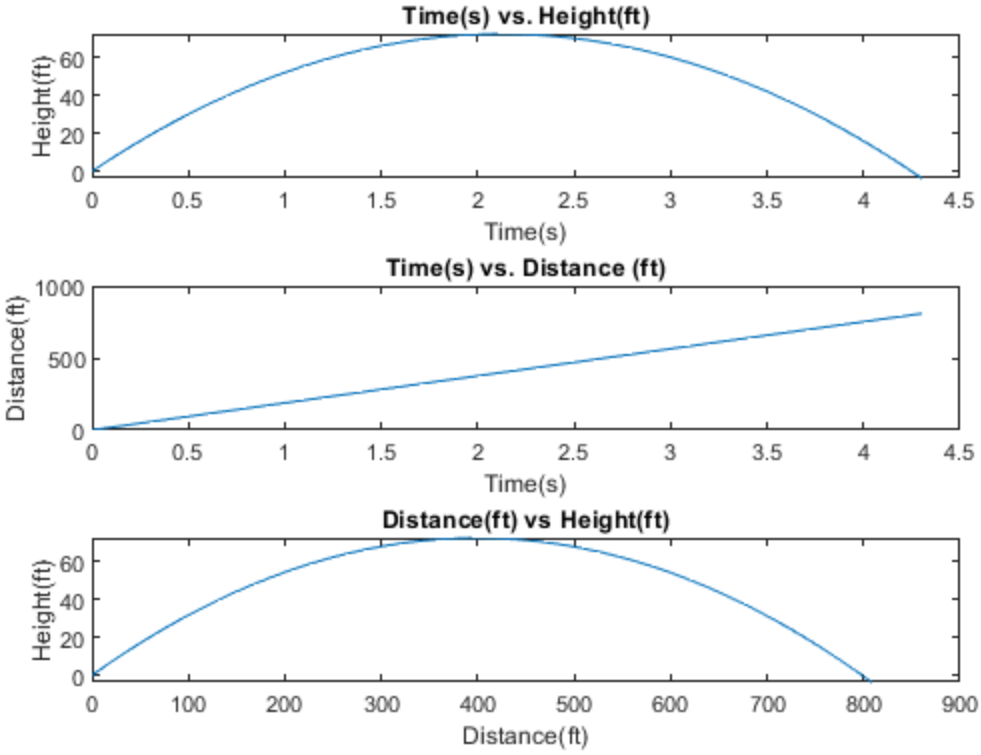
```
%problem 4.8
clc;clear
g=32.2; %ft/s^2
v=200; %ft/s
theta=20; %deg
t1=0;
h=0;
for t=1:100
    if h>=0
    h(t)=v*t1*sind(theta)-0.5*g*t1^2;
    x(t)=v*t1*cosd(theta);
    t2(t)=t1;
    t1=t1+0.1;
    end
end
figure(1)
subplot(3,1,1)
plot(t2,h)
title('Time(s) vs. Height(ft)')
xlabel('Time(s)')
ylabel('Height(ft)')

subplot(3,1,2)
plot(t2,x)
title('Time(s) vs. Distance (ft)')
xlabel('Time(s)')
ylabel('Distance(ft)')

subplot(3,1,3)
plot(x,h)
title('Distance(ft) vs Height(ft)')
xlabel('Distance(ft)')
ylabel('Height(ft)')
```



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Example 4.2

This program searches for right triangles for which all three sides are integers.

```
% Initialize the counter m
m = 0;

% Loop to check all combinations of x and y up to the limits

for x = 1:25

    for y = x:25

        % Calculate the hypotenuse h

        h = sqrt(x^2 + y^2);

        % Check to see if h is an integer.
        % IF it is, print x, y, and h and advance counter m

        if h == floor(h)
            m = m + 1;
            x
            y
            h
        end
    end
end

m
```

```
x =

     3


y =

     4


h =

     5


x =

     5


y =
```

```
    12

h =

    13

x =

     6

y =

     8

h =

    10

x =

     7

y =

    24

h =

    25

x =

     8

y =

    15

h =

    17
```

```
x =
     9

y =
    12

h =
    15

x =
    10

y =
    24

h =
    26

x =
    12

y =
    16

h =
    20

x =
    15

y =
    20
```

```
h =
    25

x =
    18

y =
    24

h =
    30

x =
    20

y =
    21

h =
    29

m =
    11
```

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Table 4.2 - Examples of fprintf Commands

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Example 1

```
m = 12
d = 7532.1234
fprintf('The value of m is %i',m)
```

```
m =

    12


d =

   7.5321e+03

The value of m is 12
```

Example 2

```
m = 12
d = 7532.1234
fprintf('The value of m is %i\n',m)
```

```
m =

    12


d =

   7.5321e+03
```

```
The value of m is 12
```

Example 3

```
m = 12
d = 7532.1234
fprintf('The value of d is %f\n',d)
```

```
m =

    12


d =

   7.5321e+03

The value of d is 7532.123400
```

Example 4

```
m = 12
d = 7532.1234
fprintf('The value of d is %.1f\n',d)
```

```
m =

    12


d =

   7.5321e+03

The value of d is 7532.1
```

Example 5

```
m = 12
d = 7532.1234
fprintf('The value of d is %10.1f\n',d)
```

```
m =

    12


d =
```

```
   7.5321e+03

The value of d is     7532.1
```

Example 6

```
m = 12
d = 7532.1234
fprintf('The value of d is %.2e\n',d)
```

```
m =

    12


d =

   7.5321e+03

The value of d is 7.53e+03
```

Example 7

```
m = 12
d = 7532.1234
fprintf('The value of d is %.1f\n The value of m is %i\n',d,m)
```

```
m =

    12


d =

   7.5321e+03

The value of d is 7532.1
 The value of m is 12
```

Example 8

```
m = 12
d = 7532.1234
fprintf('The value of d is %i\n',d)
```

```
m =

    12
```

```
d =

   7.5321e+03

The value of d is 7.532123e+03
```

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