When you have completed the exercise, show this sheet and any associated programs to your discussion instructor, who will record that you have completed the work. If you do not finish this exercise in class, you have until *Sunday*, 9/11, at 9pm to get your exercise checked off during consulting hours or during *TAs' office hours*.

1 Which quadrant continued...

Last section you write two separate programs to determine in which quadrant a user-input value of A degrees belongs, assuming that the user enters a non-negative number. You should have used the function **rem** and the following convention:

Quadrant is $\begin{cases} 1 & \text{if } 0 \le A < 90\\ 2 & \text{if } 90 \le A < 180\\ 3 & \text{if } 180 \le A < 270\\ 4 & \text{if } 270 \le A < 360 \end{cases}$

Write a program, called **angle3.m** which prints which quadrant the user-input belongs using nested if statements (do not use logical operators &&, \parallel , or $\tilde{}$ and do not use **elseif** or **else**).

2 Multiples of k

The following program reads an integer k and outputs all positive multiples of k up to 1000. Fill in the blank.

k = input('Please enter a positive integer smaller than 1000: ');

```
for j = _____
fprintf('%d ', j);
end
fprintf('\n');
```

3 Approximate π

[Modified from *Insight* Exercise P2.1.5] For large n,

$$T_n = 1 + \frac{1}{2^2} + \dots + \frac{1}{n^2} = \sum_{k=1}^n \frac{1}{k^2} \qquad \approx \frac{\pi^2}{6}$$

$$R_n = 1 - \frac{1}{3} + \dots + \frac{(-1)^{n+1}}{2n-1} = \sum_{k=1}^n \frac{(-1)^{k+1}}{2k-1} \approx \frac{\pi}{4}$$

giving two different ways to estimate π :

$$\begin{array}{rcl} \tau_n &=& \sqrt{6T_n} \\ \rho_n &=& 4R_n \end{array}$$

Write a script that displays the value of $|\pi - \rho_n|$ and $|\pi - \tau_n|$ for $n = 100, 200, \dots, 1000$ in one table. Do not use arrays.