1. For each piece of code below, give the output of the code. You may assume that each piece is part of a working program. If the code does not terminate, give the first 3 outputs and then state “infinite loop”.

(a) (2 points)
\[
\begin{align*}
x &= 10; \\
\text{if } (x > 5) \{ \\
&\quad \text{System.out.println("greater than 5");} \\
\} \text{ else if } (x > 8) \{ \\
&\quad \text{System.out.println("greater than 8");} \\
\} \text{ else if } (x == 10) \{ \\
&\quad \text{System.out.println("equal to 10");} \\
\} \text{ else } \\
&\quad \text{System.out.println("other");}
\end{align*}
\]

Solution: greater than 5
Note that this is a single if statement!

(b) (2 points)
\[
\begin{align*}
\text{int } x &= 4; \\
\text{while}(x \neq 0) \{ \\
&\quad \text{System.out.println(x);} \\
&\quad x -= 3;
\}
\end{align*}
\]

Solution: 4
1
-2
infinite loop (skips over value 0 so loop never terminates)
(c) (3 points)
int x = 0;
while(x <= 10) {
    System.out.println(x);
    if (x <= 2) {
        x++;
    } else if (x <= 5) {
        x = x + 2;
    } else {
        x = x + 4;
    }
}

Solution: 0
1
2
3
5
7
Note, this does not print out the final value of x (11)

(d) (2 points)
int x = 4;
while(x > 0) {
    System.out.println(x);
    x -= 2;
}

Solution: 4
2

(e) (3 points)
x = 10;
if (x > 5) {
    System.out.println("greater than 5");
} if (x > 8) {
    System.out.println("greater than 8");
} if (x == 10) {
    System.out.println("equal to 10");
} else {
    System.out.println("other");
}

Solution: greater than 5
greater than 8
equal to 10
Note: This is actually 3 if statements. Each are evaluated separately, leading to 3 printed statements.
2. Consider the code below:

```java
Scanner in = new Scanner(System.in);
int x = in.nextInt();
switch(x) {
    case 1:
        System.out.println("One");
        break;
    case 2:
        System.out.println("Two");
    case 3:
        System.out.println("Three");
    case 4:
        System.out.println("Four");
        break;
    default:
        System.out.println("Other");
}
```

(a) (1 point) What is the output of the code if the user enters 1?

**Solution:** "One"

(b) (1 point) What is the output of the code if the user enters 3?

**Solution:** "Three" "Four"

*Note: There is no break statement associated with case 3, so the code “falls through” to case 4 as well.*

(c) (1 point) What is the output of the code if the user enters 10?

**Solution:** "Other"