Consider the following Java class.

```java
public class Child extends Parent {
    public int x = 0;

    public boolean equals(Object obj) {
        if (this == obj) return true;
        if (!super.equals(obj)) return false;
        if (getClass() != obj.getClass())
            return false;
        Child other = (Child) obj;
        if (x != other.x) return false;
        return true;
    }
}
```

(a) Explain why it is bad practice for member variables such as x to be public. [2 marks]

(b) For each of the lines 6–12, explain its purpose. Illustrate your answer with examples. [7 marks]

(c) What could result from a call to c.equals(null), assuming c is a reference to a Child object? [3 marks]

(d) What would be the consequences of replacing the equals signature with public boolean equals(Child obj)? [4 marks]

(e) Explain why Child should also override the hashCode() method. [4 marks]