equals() overriding

① equals() must be reflexive.
   d1.equals(d1) must be true.

② equals() must be symmetric.
   if d1.equals(d2) is true,
   then d2.equals(d1) must be true.

③ equals() must be transitive.
   if d1.equals(d2) is true and
   d2.equals(d3) is true, then
   d1.equals(d3) must be true.

④ equals() must be consistent
   Result of d1.equals(d2) should
   remain same until any
   of the object state modified.

⑤ null comparison
   d1.equals(null) must be false.

⑥ Comparison with incompatible type.
   d1.equals("1-1-2024") must false

```
class Date {
    private int d, m, y;
    // constructors, getters/setters

    public boolean equals(Object other) {
        if (other == null)
            return false;  // rule 5
        if (this == other)
            return true;  // rule 1
        if (!(other instanceof Date))
            return false;  // rule 6
        Date that = (Date) other;
        if (this.d == that.d && this.m == that.m &&
            this.y == that.y)  // state comparison
            return true;
        return false;
    }
}
```

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