Lab 3

Task 1

a)

```
R = σ Class = 1 (Courses) ∪ σ Class = 2 (Courses)
π SID (π CID (R) ⋈ Gradebook ⋈ Students)
```

b)

```
R1 = π SID (σ Class = 1 (Courses) ⋈ Gradebook ⋈ Students)
R2 = π SID (σ Surname = 'Valdez' (Students))
R1 ∪ R2
```

c)

```
R1 = π SID (σ Class = 1 (Courses) ⋈ Gradebook ⋈ Students)
R2 = π SID (σ Class = 2 (Courses) ⋈ Gradebook ⋈ Students)
R1 ∩ R2
```

d)

```
R = (π SID, CID (Gradebook)) ÷ (π CID (Courses))
π SID R
```

e)

```
R1 = (π CID (σ Class = 3 (Courses)))
R2 = (π SID, CID (Gradebook) ÷ R1)
π SID R2
```

f)

```
R_joined = ρ R1 (Gradebook) × ρ R2 (Gradebook)
R_selected = σ (R1.CID = R2.CID ∧ R1.Mark < R2.Mark) (R_joined)
π R1.SID, R2.SID (R_selected)
```

g)

```
R_joined = ρ R1 (Gradebook) × ρ R2 (Gradebook)
R_selected = σ (R1.CID = R2.CID ∧ R1.SID != R2.SID) (R_joined)
π R1.CID (R_selected)
```

Task 2

a) Warrent

b) Warrent

c) No rows

d) No rows