Solution for Moed B Q1

a)

```
SELECT district_id
FROM district
WHERE A2 = 'Center';
```

b)

```
SELECT MAX(amount) AS max_loan
FROM loan;
```

c)

```
SELECT client.client_id, card.card_id
FROM client
JOIN district  ON district.district_id = client.district_id
JOIN disp  ON disp.client_id   = client.client_id
JOIN card  ON card.disp_id = disp.disp_id
WHERE district.A4 = 5;
```

d)

```
SELECT a.account_id
FROM account a
LEFT JOIN loan l
  ON l.account_id = a.account_id
 AND l.amount > 1000000
WHERE l.loan_id IS NULL;
```

e)

```
CREATE VIEW account_transactions AS
SELECT a.account_id,
      COUNT(t.trans_id) AS num_transactions
FROM account AS a
LEFT JOIN trans AS t
  ON t.account_id = a.account_id
GROUP BY a.account_id;
```

f)

```
SELECT num_transactions, COUNT(*) AS num_accounts
FROM account_transactions GROUP BY num_transactions
ORDER BY num_transactions ASC;
```

g)

```
SELECT c1.client_id AS a,
         c2.client_id AS b
FROM client c1
JOIN client c2
  ON c1.birth_date = c2.birth_date
WHERE c1.client_id <> c2.client_id;
```

במקרה זה אין לכלול זוגות רפלקסיביים, משום שהם אינם מוסיפים מידע חדש – ברור שכל לקוח "נולד עם עצמו". הכללתם תגרום לניפוח מלאכותי של התוצאות ותיצור כפילויות לא נחוצות. השאלה דורשת סימטריה בין לקוחות שונים (כלומר (a,b) וגם (b,a)), ולא רפלקסיביות. לכן נכון להחזיר זוגות סימטריים בלבד ולהשמיט את (a,a).

h)

i)

```
CREATE VIEW client_card_signature AS

SELECT c.client_id,

        GROUP_CONCAT(DISTINCT ca.type ORDER BY ca.type) AS
card_signature

FROM client c

JOIN disp d  ON c.client_id = d.client_id

JOIN card ca ON d.disp_id   = ca.disp_id

GROUP BY c.client_id;
```

ii)

```
CREATE VIEW card_signature_distribution AS

SELECT card_signature, COUNT(*) AS num_clients

FROM client_card_signature

GROUP BY card_signature

ORDER BY num_clients DESC;
```

iii)

```
SELECT num_cards, COUNT(*) AS num_clients

FROM client_num_cards

GROUP BY num_cards

ORDER BY num_cards;
```