math symbols and corresponding SQL for 7907

All SQL examples here not apply to all SQL environment, this is just for demo purpose, adjust them according to your environment.

selection

- $\sigma_{title="Elect.Eng"}(EMP)$

```
SELECT title FROM EMP WHERE title = "Elect. Eng";
```

projection

- $\Pi_{pno,budget}(PROJ)$

```
SELECT pno, budge FROM PROJ;
```

union

- $APR \cup PROJ$ [1]

```
SELECT name FROM APR
UNION
SELECT name FROM PROJ
ORDER BY name;
```

set difference

- $R - S$ [2]

```
SELECT name FROM R
EXCEPT
SELECT name FROM S;
```

cartesian product

- $EMP \times PAY$ [3]

```
SELECT * FROM EMP
CROSS JOIN
PAY;
```

intersection

- $APR \cap PROJ$[4]

```
SELECT name FROM APR
INTERSECT
SELECT name FROM PROJ;
```

θ-join

θ-join simply to say just inner-join

- $EMP \bowtie_{EMP.eno=ASG.eno} ASG$

```
SELECT * FROM EMP
INNER JOIN
ASG ON EMP.eno = ASG.eno;
```

left outer join

- A ⋈ B

```
SELECT A.sth, B.sth FROM A
LEFT JOIN
B ON A.name = B.name;
```

right outer join

- A ⋈ B

```
SELECT A.sth, B.sth FROM A
RIGHT JOIN
B ON A.name = B.name;
```

full outer join

- A ⋈ B

```
SELECT A.sth, B.sth FROM A
FULL JOIN
B ON A.name = B.name;
```

semi-join

- $A \ltimes_F B$

```
SELECT * FROM A
INNER JOIN
B ON A.name = B.name;
```

Some tips

union vs join

For those who not really understand the difference between union and join please check this [page](). Here I give simple explaination. When you do union operation(two tables must similar columns), the more row will be added to you result set. However, when you do join operation(two tables must correlated) the more column will be added to you result set;

intersection vs inner-join

The difference between **intersection** and **inner-join** is that intersection does row operation, whereas inner-join does column operation

θ-join vs semi-join

θ-join is just inner-join, whereas semi-join is similar as inner-join except the columns of result set only appears from **left table**;

Reference

1: https://www.w3schools.com/sql/sql_union.asp

2: https://docs.microsoft.com/en-us/sql/t-sql/language-elements/set-operators-except-and-intersect-transact-sql?view=sql-server-2017

3: http://www.dba-oracle.com/t_cross_join.htm

4: https://www.techonthenet.com/sql/intersect.php