

1. Decide whether each following sentences is a proposition.

(a) Boston is the capital of Massachusetts.

**Answer.** This is a proposition.

(b) Miami is the capital of Florida.

**Answer.** This is a proposition.

(c)  $2 + 3 = 5$ .

**Answer.** This is a proposition.

(d)  $5 + 7 = 10$

**Answer.** This is a proposition.

(e)  $x + 2 = 11$

**Answer.** This is not a proposition.

(f) Answer this question.

**Answer.** This is not a proposition.

2. Let  $p$  and  $q$  be the propositions

$p$  : It is below freezing.

$q$  : It is snowing.

Write the following propositions using  $p$  and  $q$  and logical connectives, including negation.

(a) It is below freezing but not snowing.

**Answer.**  $p \wedge (\neg q)$

(b) If it is below freezing then it is also snowing.

**Answer.**  $p \rightarrow q$