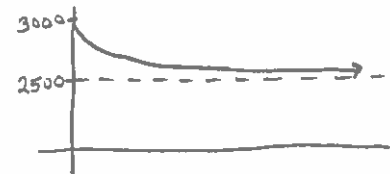
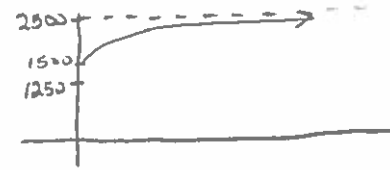
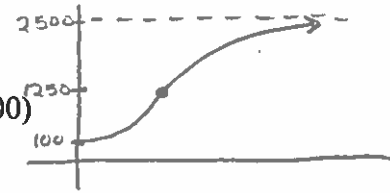


Answers to Worksheet on Logistic Growth

1. (a) (i) 2500
 (ii) [100, 2500)
 (iii) increasing for [100, 2500)
 (iv) concave up for (100, 1250) and concave down for (1250, 2500)
 (v) yes, IP when $P = 1250$
 (vi) sketch
- (b) (i) 2500
 (ii) [1500, 2500)
 (iii) increasing for [1500, 2500)
 (iv) concave down for (1500, 2500)
 (v) no
 (vi) sketch
- (c) (i) 2500
 (ii) (2500, 3000]
 (iii) decreasing for (2500, 3000]
 (iv) concave up for (2500, 3000)
 (v) no
 (vi) sketch



2. 6000; there are 6000 people at the dance.

3. E

4. C

5. (a) 100

(b) Close to 0? $P = 0$ and $P = 100$

Largest? $P = 50$

Increasing? $P(0) < 100$

Decreasing? $P(0) > 100$

(c) In common? All have a limit of 100.

Differ? Two are increasing; one is decreasing.

Inflection points? The one with initial condition of 20.

At what pop. level does the inflection point occur? When $P = 50$.

6. (a) sketch

(b) Increasing? $P(t) < 1$

Decreasing? $P(t) > 1$

In the long run? $\lim_{t \rightarrow \infty} P(t) = 1$

Any inflection points? Yes

Where? When $P(t) = 0.5$

What do they mean for the population? The population is growing the fastest when $P(0) = 0.5$.