

Name: \_\_\_\_\_

Show work needed to justify your answer.

Date: \_\_\_\_\_

HW: # 38b: Math IBSL - Standard 37 - Exponents

5 points

---

**4** Teacher Tom makes a cup of coffee and leaves it on his table.

Its temperature ( $H$  °C) is modelled by the function  $H = (65)2^{-\frac{t}{2}} + 25$ , where  $t$  is the time in minutes after Tom makes the coffee.

- a** State the initial temperature of the coffee.
  - b** Find the temperature of the coffee after 3 minutes.
  - c** Tom likes to drink his coffee when it is 40°C or cooler. Find, to the nearest minute, how long he should wait to drink his coffee.
  - d** Determine the temperature of the room where Tom set down his coffee.
-

Name: \_\_\_\_\_

Show work needed to justify your answer.

Date: \_\_\_\_\_

HW: # 38b: Math IBSL - Standard 37 - Exponents

5 points

---

- 5 The value,  $y$ , of a car, in thousands of dollars, is modelled by the function  $y = 30(0.9)^x$ , where  $x$  is the number of years since the car was manufactured.
- a Find the value of the car when it was new.
  - b Determine the value of the car when it is 3 years old.
  - c Use your GDC to estimate when the value of the car will be half of its original value.
- 
- 6 The population ( $P$ ) of squirrels in a park is modelled by the function  $P = 40(1.5)^t$ , where  $t$  is the number of years that have elapsed since recording the squirrel population began.
- a State how many squirrels there were initially.
  - b Estimate the population of squirrels in the park after two years.
  - c By plotting a graph on your GDC, find how long will it take the population of squirrels to reach 200.