

Bellwork Alg 2 Monday, March 30, 2020

1. The number of a certain bacteria doubles every 25 minutes. There are 20 bacteria at 10:15 am.

a) Find the number of bacteria, to the nearest whole number, at 2:40 pm.

b) Find the number of hours, to the nearest hundredth, it will take for the number of bacteria to reach 5000.

2. Solve.

$$8e^{x+5} + 11 = 53$$

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ANSWERS

1. The number of a certain bacteria doubles every 25 minutes. There are 20 bacteria at 10:15 am.

a) Find the number of bacteria, to the nearest whole number, at 2:40 pm.

$b = \text{base} = 2$

$a = \text{initial amount} = 20$

$X = \text{Exponent} = \# \text{ 25 min periods}$

TOTAL TIME FROM 10:15am to 2:40pm

$= 4 \text{ hrs } 25 \text{ min} = 265 \text{ min}$

$$X = \frac{265}{25} = 10.6$$

$$y = 20(2)^{10.6}$$

$$= 31,042 \text{ bacteria}$$

b) Find the number of hours, to the nearest hundredth, it will take for the number of bacteria to reach 5000.

$$\frac{5000}{20} = \frac{20(2)^X}{20}$$

$$250 = 2^X$$

$$\log_2(250) = X$$

$$X = 7.97 \text{ 25 min periods} \approx 199.25 \text{ min}$$

$$\div 60 =$$

$$3.32 \text{ hrs}$$

2. Solve.

$$8e^{x+5} + 11 = 53$$

$$\frac{8e^{x+5}}{8} = \frac{42}{8}$$

$$e^{x+5} = 5.25$$

$$\ln 5.25 = x+5$$

$$x = \ln 5.25 - 5$$

$$x = -3.34$$