Secondary 3 Name_____

8.2 Exponential Models

Date_____ Period____

Calculate the balance of each account.

1) You put $2000 into a college savings acocunt for four years. The account pays 6% interest annually.

2) You put $1500 into a college savings acocunt for ten years. The account pays 4% interest annually.

3) Suppose you invest $2000 in a savings account that pays interest at an annual rate of 4%. Supposing that no money is added to or withdrawn from the account,
a) how much will be in the account after 3 years?

b) how much will be in the account after 18 years?

4) Suppose you invest $2000 in a savings account that pays interest at an annual rate of 4%. Supposing that no money is added to or withdrawn from the account,
a) how many years will it take for the account to contain $2500?

b) how many years will it take for the account to contain $3000?

Write an exponential function to model each situation. Then find each amount after the specified time.

5) A population of 120,000 grows 1.2% per year for 15 years.

6) A population of 1,860,000 decreases 1.5% each year for 12 years.

7) A car is valued at $25,000. After it is purchased, it loses 12% of its value each year. What is the value of the car after 5 years?

8) A car is valued at $16,000. After it is purchased, it loses 8% of its value each year. What is the value of the car after 8 years?

Use the graph of $y = e^x$ to evaluate each expression to 4 decimal places.

9) e^6

10) e^e

Find the amount in a continuously compounded account for the given conditions.

11) principal: \$2000
annual interest rate: 5.1%
time: 3 years

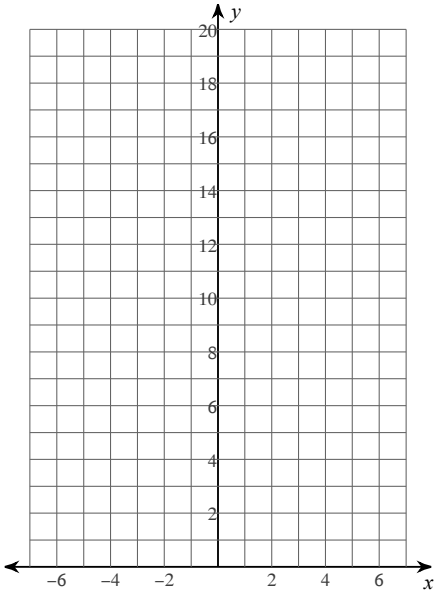
12) principal: \$400
annual interest rate: 7.6%
time: 1.5 years

13) A student wants to save \$8000 for college in 5 years. How much should be put into an account that pays 5.2% annual interest compounded continuously?

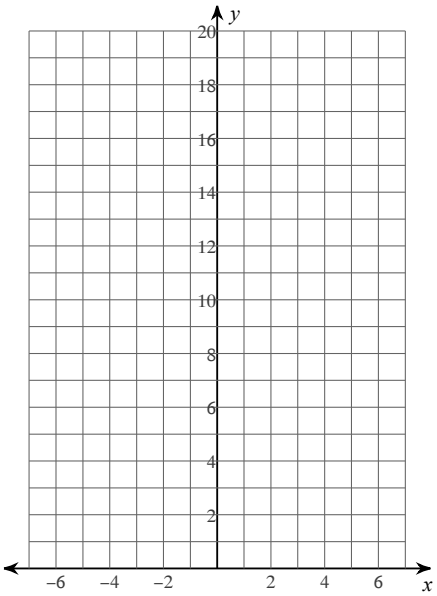
14) How long would it take to double your principal in an account that pays 6.5% annual interest compounded continuously?

Sketch the graph of each function.

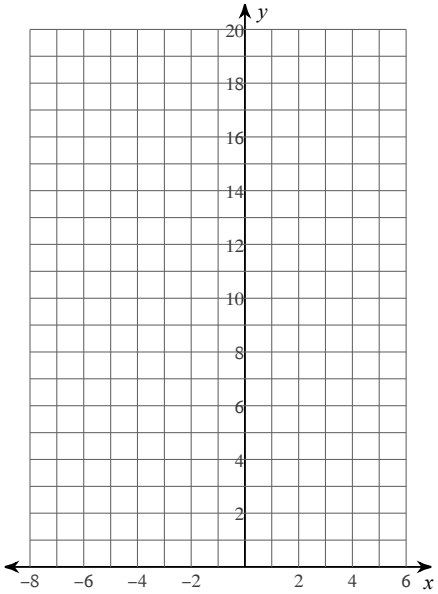
15) $y = 3 \cdot 2^x$



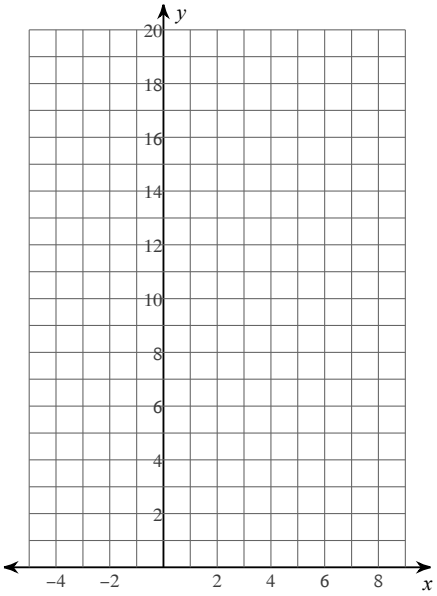
16) $y = 4 \cdot \left(\frac{1}{2}\right)^x$



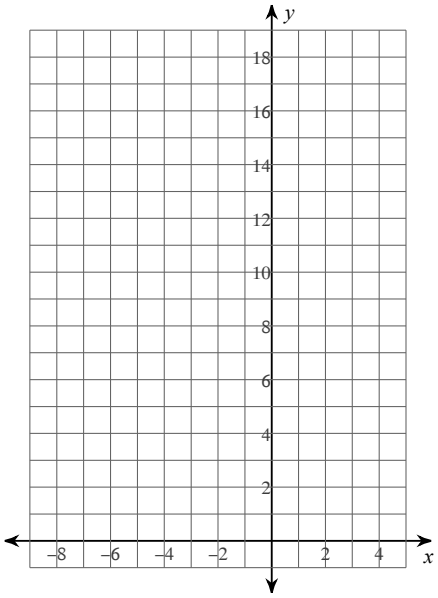
17) $y = 4 \cdot \left(\frac{1}{2}\right)^{x+1} + 1$



18) $y = 5 \cdot 2^{x-2} + 1$



19) $y = \frac{1}{3} \cdot 6^{x+2} - 1$



20) $y = 2 \cdot \left(\frac{1}{3}\right)^{x+1} - 2$