Exam

Name_____

Chapter 10 practice #2

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Simplify without using a calculator.

1) $36^{-3/2}$

    A) $-\dfrac{1}{216}$ B) -216 C) 216 D) $\dfrac{1}{216}$

1) _____

2) $81^{1/4}$

    A) 12 B) 36 C) 3 D) 243

2) _____

Simplify.

3) $(3b^{-8})(-9b^{-5})$

    A) $\dfrac{27}{b^{13}}$ B) $\dfrac{-27}{b^{13}}$ C) $27b^{13}$ D) $-27b^{13}$

3) _____

4) $\dfrac{28a^{13}b^{-4}}{7a^6b^{-12}}$

    A) $\dfrac{4b^8}{a^7}$ B) $\dfrac{4a^7}{b^8}$ C) $\dfrac{4}{a^7b^8}$ D) $4a^7b^8$

4) _____

5) $\left(\dfrac{4x^{-2}y^2}{12x^{-4}y^{-1}}\right)^3$

    A) $\dfrac{x^6y^9}{3}$ B) $\dfrac{x^2y^3}{3}$ C) $\dfrac{x^8y^6}{9}$ D) $\dfrac{x^6y^9}{27}$

5) _____

Simplify the expression. Assume that n is a counting number.

6) $\dfrac{b^{(6n-5)}}{b^{(4n+4)}}$

    A) $b^{(2n-9)}$ B) $b^{(2n+9)}$ C) $b^{(10n+9)}$ D) $b^{(10n-9)}$

6) _____

Simplify the expression. Assume that all variables are positive.

7) $x^{-2/7}x^{3/7}$

    A) $x^{7/6}$ B) $x^{-1/7}$ C) $x^{1/7}$ D) $x^{6/7}$

7) _____

8) $\dfrac{(216b^{-7}c^{12})^{2/3}}{(128b^{49}c^4)^{3/7}}$

    A) $\dfrac{9b^{68/7}}{2c^{49/3}}$ B) $\dfrac{9c^{44/7}}{2b^{77/3}}$ C) $\dfrac{9c^{68/7}}{4b^{49/3}}$ D) $\dfrac{9b^{44/7}}{2c^{77/3}}$

8) _____

9) $\dfrac{x^{-1/2}y^{1/8}}{(x^4y^{-5})^{-1/2}}$

9) _____

A) $\dfrac{y^{19/8}}{x^{3/2}}$

B) $\dfrac{x^{3/2}}{y^{19/8}}$

C) $-\dfrac{x^{3/2}}{y^{19/8}}$

D) $x^{3/2}y^{19/8}$

Evaluate as specified.

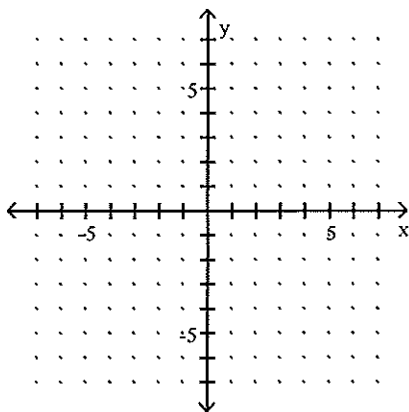10) For $f(x) = 256^x$, find $f\left(\dfrac{1}{4}\right)$.
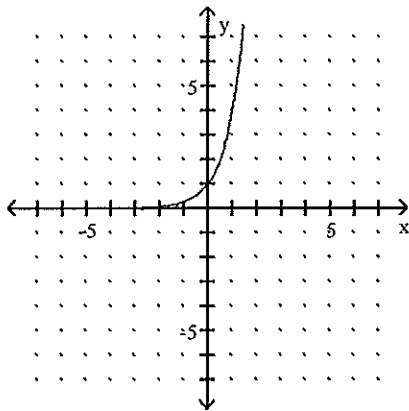
10) _____

A) 4

B) 8

C) 16

D) 64

Sketch the graph of the given function.
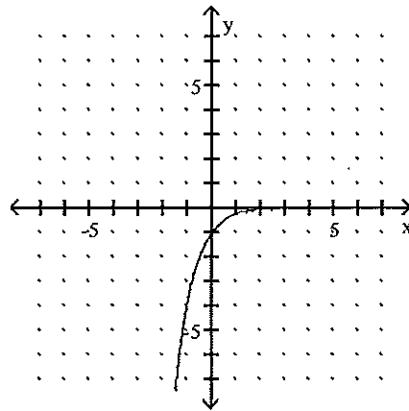
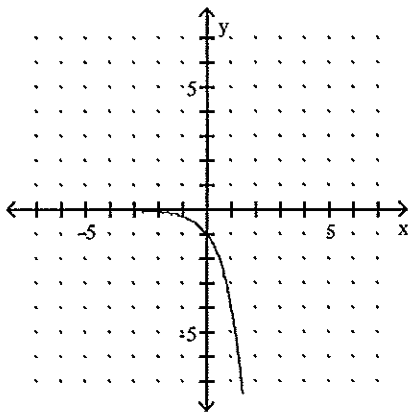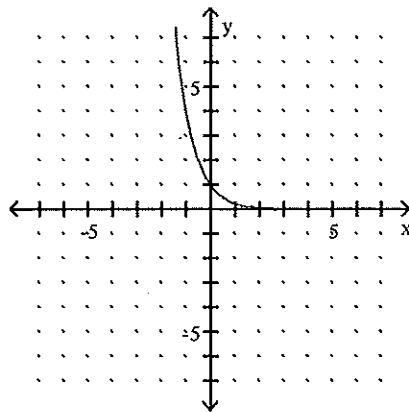11) $y = \left(\dfrac{1}{4}\right)^x$

11) _____

A)

B)

C)

D)

2

Find an approximate equation $y = ab^x$ of the exponential curve that contains the given pair of points. Round the values of a and/or b to two decimal places, if necessary.

12) (0, 3) and (5, 131)

    A) $y = 3(218.33)^x$ B) $y = 3(1.92)^x$ C) $y = 3(8.73)^x$ D) $y = 3(2.13)^x$

12) _____

13) (4, 24.3) and (8, 110.3)

    A) $y = 5.35(1.46)^x$ B) $y = 186.92(0.91)^x$

    C) $y = 1.64(1.47)^x$ D) $y = 126.00(1.46)^x$

13) _____

Solve the problem.

14) The table displays the number of units of a product that were sold during several years on record.

14) _____

Year	Annual Sales (in units of product)
1990	302
1992	421
1994	605
1996	845
1998	1200
1999	1439

Let $f(t)$ be the sales of units of the product in the year that is t years since 1990. Find an exponential model $f(t) = ab^t$ using the data for 1996 and 1999.

    A) $f(t) = 36.02(1.32)^t$ B) $f(t) = 297.56(1.19)^t$

    C) $f(t) = 247.08(0.57)^t$ D) $f(t) = 118.35(1.19)^t$

15) A storage tank contains a radioactive element with a half–life of 8 years. Let $g(t)$ be the percentage of the element that remains at t years since the element was placed in the tank. Find an equation of g.

    A) $g(t) = 100(0.958)^t$ B) $g(t) = 100(0.125)^t$

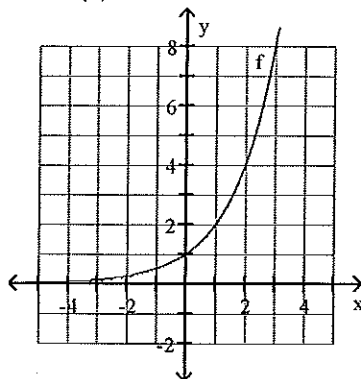   C) $g(t) = 100(0.917)^t$ D) $g(t) = 100(0.125)^{0.5t}$

15) _____

Find all real–number solutions. Round your answer to the second decimal place, if necessary.

16) $5.3b^4 + 95.2 = 285.6$

    A) ± 8.98 B) 8.98

    C) ± 2.45 D) No real–number solution

16) _____

Use the graph to find the requested value.

17) Find f(1).

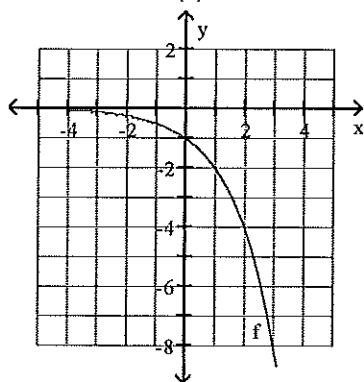A) 2 B) 4 C) 0 D) 8

18) Find x where f(x) = −2.

A) 1 B) 0 C) −4 D) −2

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve the problem.

19) A person invests $6000 at 9% interest compounded annually. Let f(t) represent the value (in thousands of dollars) of the account at t years after the $6000 is deposited.
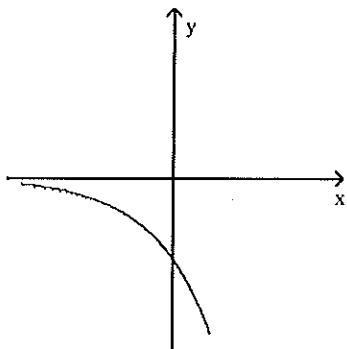
i)   Find an equation for f.

ii) What will the value be in 8 years?

iii) What is the coefficient a in your model $f(t) = ab^t$? What does it mean in terms of the account?

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

A graph of a function of the form $y = ab^x$ is given. What can you conclude about the constants a and b?

20)

20) _____

A) $a < 0, \ b > 1$ B) $a < 0, \ 0 < b < 1$ C) $a > 0, \ b > 1$ D) $a > 0, \ 0 < b < 1$

1) D
2) C
3) B
4) D
5) D
6) A
7) C
8) B
9) B
10) A
11) D
12) D
13) A
14) B
15) C
16) C
17) A
18) A
19) i) $f(t) = 6(1.09)^t$
   ii) $11,955.38
   iii) 6; $6000 was deposited in the account at the beginning of the investment.
20) A