

Exam

Chapter 10 practice #2

Name _____

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) $-\frac{1}{216}$

B) -216

C) 216

D) $\frac{1}{216}$

1) _____

2) $81^{1/4}$

A) 12

B) 36

C) 3

D) 243

2) _____

Simplify.

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

A) $\frac{27}{b^{13}}$

B) $\frac{-27}{b^{13}}$

C) $27b^{13}$

D) $-27b^{13}$

3) _____

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

A) $\frac{4b^8}{a^7}$

B) $\frac{4a^7}{b^8}$

C) $\frac{4}{a^7b^8}$

D) $4a^7b^8$

4) _____

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

A) $\frac{x^6y^9}{3}$

B) $\frac{x^2y^3}{3}$

C) $\frac{x^8y^6}{9}$

D) $\frac{x^6y^9}{27}$

5) _____

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

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

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

A) $\frac{9b^{68/7}}{2c^{49/3}}$

B) $\frac{9c^{44/7}}{2b^{77/3}}$

C) $\frac{9c^{68/7}}{4b^{49/3}}$

D) $\frac{9b^{44/7}}{2c^{77/3}}$

8) _____

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

9) _____

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

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

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

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

Evaluate as specified.

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

10) _____

A) 4

B) 8

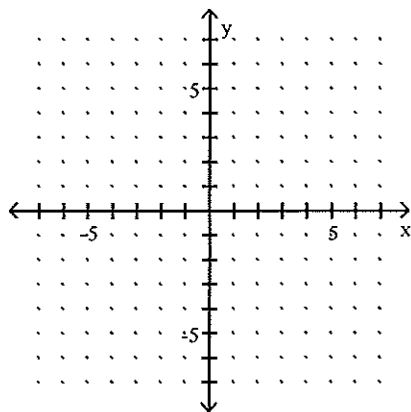
C) 16

D) 64

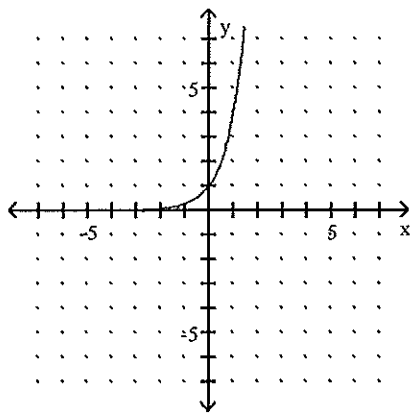
Sketch the graph of the given function.

11) $y = \left(\frac{1}{4}\right)^x$

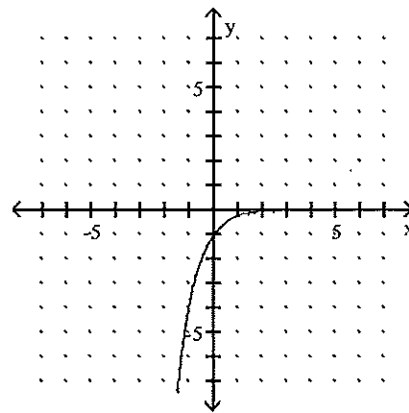
11) _____



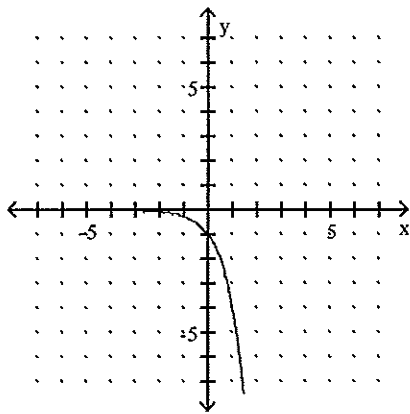
A)



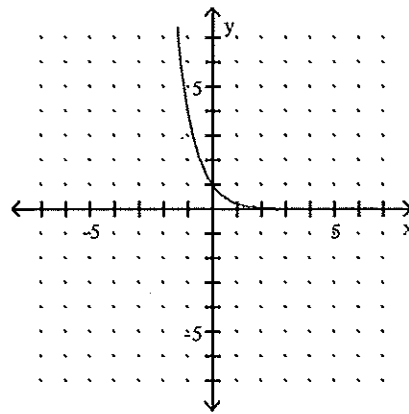
B)



C)



D)



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

- 13) (4, 24.3) and (8, 110.3) 13) _____
 A) $y = 5.35(1.46)^x$ B) $y = 186.92(0.91)^x$
 C) $y = 1.64(1.47)^x$ D) $y = 126.00(1.46)^x$

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 . 15) _____
 A) $g(t) = 100(0.958)^t$ B) $g(t) = 100(0.125)^t$
 C) $g(t) = 100(0.917)^t$ D) $g(t) = 100(0.125)^{0.5t}$

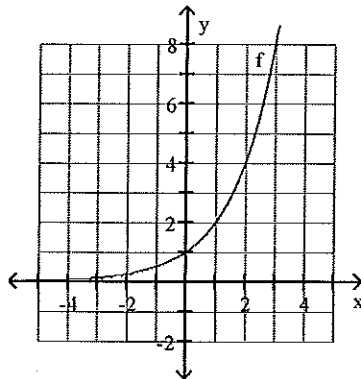
Find all real-number solutions. Round your answer to the second decimal place, if necessary.

- 16) $5.3b^4 + 95.2 = 285.6$ 16) _____
 A) ± 8.98 B) 8.98
 C) ± 2.45 D) No real-number solution

Use the graph to find the requested value.

17) Find $f(1)$.

17) _____



A) 2

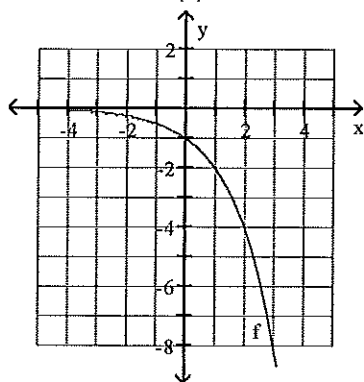
B) 4

C) 0

D) 8

18) Find x where $f(x) = -2$.

18) _____



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. 19) _____

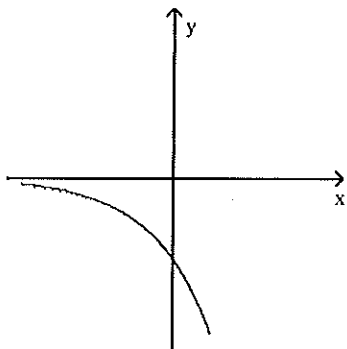
- i) Find an equation for f .
- ii) What will the value be in 8 years?
- iii) What is the coefficient a in your model $f(t) = ab^t$? What does it mean in terms of the account?

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) $a > 0, 0 < b < 1$

Answer Key

Testname: CHAPTER 10 TEST 2

- 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