
MATH PLACEMENT TEST FOR BUSINESS
SAMPLE TEST #4

1. Perform the following operation and simplify:

$$6(4x^3 + x^2 - 1) - 7(5x^3 - 2x + 2)$$

- A. $-11x^3 + 6x^2 + 14x + 20$
- B. C. $-11x^3 + 6x^2 - 14x - 20$
- C. $-11x^3 + 6x^2 + 14x - 20$
- D. D. $-11x^3 + x^2 + 14x - 20$
- E. None of the above

2. Perform the following operation and simplify:

$$\frac{x^2 + 7x + 10}{x^2 + 8x + 15} \cdot \frac{x^2 + 3x}{x^2 - 3x - 10}$$

- A. $\frac{x^2 + 3x}{x - 5}$
- B. $\frac{x}{x^2 + 8x + 15}$
- C. $\frac{1}{x - 5}$
- D. $\frac{x}{x - 5}$
- E. None of the above

3. Perform the following operation and simplify:

$$\frac{-1}{x} + \frac{5}{x^4 + 4} + \frac{4}{x^5 + 4x}$$

- A. $\frac{5 + x^3}{x^4 + 4}$
- B. $\frac{5 - x^3}{x^4 + 4}$
- C. $\frac{x^3 - 5}{x^4 + 4}$
- D. $\frac{5 + x^3}{x(x^4 + 4)}$
- E. None of the above

4. Factor completely the following Expression:

$$10x^2 + 25x + 6x + 15$$

- A. $(5x - 3)(2x - 5)$
B. $(10x - 3)(x - 5)$
C. $(5x + 3)(2x + 5)$
D. $(10x + 3)(x + 5)$
E. None of the above
5. Perform the following operation assuming that x and y are positive real numbers. Write the answer using positive exponents only:

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

- A. $\frac{x^6}{y^{12}}$
B. $\frac{y^9}{x^{15}}$
C. $\frac{x^9}{y^{15}}$
D. $\frac{y^6}{x^{12}}$
E. None of the above
6. Write the following expression in radical form:

$$(16x)^{\frac{3}{5}}$$

- A. $\sqrt[5]{16x^3}$
B. $\sqrt[3]{(16x)^5}$
C. $\sqrt[5]{(16x)^3}$
D. $8\sqrt[5]{x^3}$
E. None of the above

7. Perform the following operation and simplify:

$$\sqrt[3]{16x} - 4\sqrt[3]{2x} - 2\sqrt[3]{54x}$$

- A. $-8\sqrt[3]{2x}$
- B. $-8\sqrt[3]{4x}$
- C. $9\sqrt[3]{2x}$
- D. $\sqrt[3]{16x} - 10\sqrt[3]{2x}$
- E. None of the above

8. Simplify the following expression:

$$\frac{\sqrt{x} - \frac{1}{6\sqrt{x}}}{\sqrt{x}}$$

- A. $\frac{6\sqrt{x} - 1}{6x}$
- B. $\frac{6x - 1}{6x}$
- C. $\frac{6x + 1}{6x}$
- D. $\frac{6x - 1}{6}$
- E. None of the above

9. Solve the linear equation:

$$-\frac{2x}{5} + \frac{1}{2} = -\frac{x}{10} + \frac{1}{4}$$

- A. $x = \frac{1}{11}$
- B. $\frac{5}{6}$
- C. $\frac{1}{2}$
- D. -30
- E. None of the above

10. Solve the following inequality, write your answer in Interval notation

$$-3(4x - 1) < -15x + 9$$

- A. $(-\infty, 2)$
- B. $(-\infty, -15]$
- C. $(-15, \infty)$
- D. $(2, \infty)$
- E. None of the above

11. Solve the following inequality and write your answer in Interval notation:

$$\left| \frac{5 - 4x}{6} \right| \leq 2$$

- A. $(-\infty, -\frac{7}{4}) \cup [\frac{17}{4}, \infty)$
- B. $(-\infty, -\frac{7}{4}] \cup (\frac{17}{4}, \infty)$
- C. $[-\frac{7}{4}, \frac{17}{4}]$
- D. No solution
- E. None of the above





12. Solve the following quadratic equation:

$$3x(x + 1) = 1$$

- A. $x = \frac{1}{2}$
- B. $x = \frac{-3 + \sqrt{21}}{6}, \quad x = \frac{-3 - \sqrt{21}}{6}$
- C. $x = \frac{3 + \sqrt{21}}{6}, \quad x = \frac{3 - \sqrt{21}}{6}$
- D. $x = 0, \quad x = \frac{1}{3}$
- E. None of the above

13. Solve the following quadratic Inequality, write your answer in interval notation and graph it:

$$x^2 - 8 \leq 7x$$

- A. $[-8, 1]$  A number line with arrows at both ends. Brackets are placed at -8 and 1, with a thick line segment connecting them. The number -8 is written below the left bracket, and the number 1 is written below the right bracket.
- B. $[-1, 8]$  A number line with arrows at both ends. Brackets are placed at -1 and 8, with a thick line segment connecting them. The number -1 is written below the left bracket, and the number 8 is written below the right bracket.
- C. $[-8, -1]$  A number line with arrows at both ends. Brackets are placed at -8 and -1, with a thick line segment connecting them. The number -8 is written below the left bracket, and the number -1 is written below the right bracket.
- D. $[1, 8]$  A number line with arrows at both ends. Brackets are placed at 1 and 8, with a thick line segment connecting them. The number 1 is written below the left bracket, and the number 8 is written below the right bracket.
- E. None of the above

14. The fixed costs of a company producing calculators are \$25,000 and it costs \$20 to produce one calculator. How many calculators were produced if the costs is \$39,000?

- A. 1950 calculators
B. 1250 calculators
C. 700 calculators
D. 1825 calculators
E. None of the above

15. Determine whether the equation $x = y^2 + 15$ defines y as a function of x

- A. Yes B. No

16. Find the domain of the following function:

$$f(x) = \frac{3x^2 - 6x}{\sqrt{6 - x}}$$

- A. All real numbers x such that $x \neq 6$
B. All real numbers x such that $x \neq 2, x \neq 0$ and $x \neq 6$
C. All real numbers x such that $x \leq 6$
D. All real numbers x such that $x < 6$
E. None of above

17. If $f(x) = 5x^2 + x + 1$, find

$$\frac{f(2+h) - f(2)}{h}$$

- A. 0
- B. $5h^2 + 21h$
- C. $21 + 5h$
- D. $5h$
- E. None of the above

18. Write the following quadratic equation in the form $y = a(x - h)^2 + k$:

$$f(x) = x^2 + 10x + 18$$

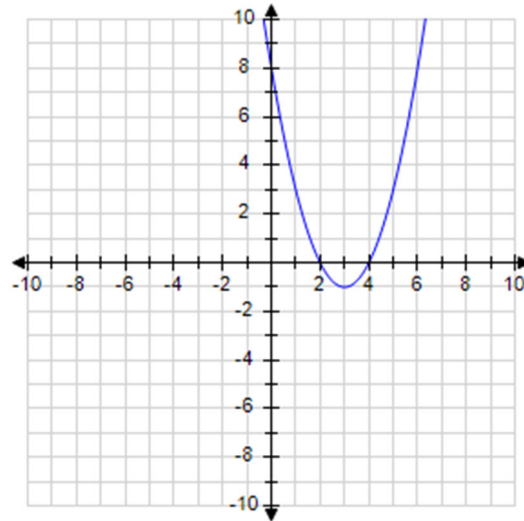
- A. $(x + 5)^2 - 7$
- B. $(x - 5)^2 - 7$
- C. $(x + 5)^2 + 7$
- D. $(x - 5)^2 + 7$
- E. None of the above

19. Determine whether the following function has a maximum or a minimum and find its value:

$$f(x) = -x^2 - 18x - 90$$

- A. Minimum, -9
- B. Maximum, 9
- C. Minimum, 0
- D. Maximum, -9
- E. None of the above

20. Given the following Graph, Find the coordinates of the vertex and the intercepts:



- A. vertex $(3, -1)$; x -intercepts 4, 2; y -intercept 8
 - B. vertex $(3, -1)$; x -intercepts 8; y -intercepts 2, 4
 - C. vertex $(-1, 3)$; x -intercepts 4, 2; y -intercept 8
 - D. vertex $(2, 4)$; x -intercepts 3; y -intercept -1
 - E. None of the above
21. The fixed costs of a company producing pants are \$50,000. If the selling price of the company is \$90 per pant, what is the revenue functions $R(x)$ coming from the sale of x pants?
- A. $R(x) = 50000 + 9x$
 - B. $R(x) = 9x$
 - C. $R(x) = 50000x - 9$
 - D. $R(x) = 9x - 50000$
 - E. None of the above
22. The revenue from the sale of x thousands units from a certain product is modeled by the function $R(x) = -2x^2 + 42x + 7$. If the cost of producing x thousands units is modeled by $C(x) = 30x + 23$, how many items should be produced and sold for the company to beak even?
- A. $x = 400$ units
 - B. $x = 2, x = 4$ units
 - C. $x = 2000, x = 4000$ units
 - D. $x = 0, x = 4$ units
 - E. None of the above

23. Find the slope and the y –intercept of the line given by the equation

$$6x - 2y = -4$$

- A. $m = 6$; y –intercept $(0, -4)$
- B. $m = 3$; y –intercept $(0, 2)$
- C. $m = 3$; y –intercept $(2, 0)$
- D. $m = -2$; y –intercept $(0, 2)$
- E. None of the above

24. Write the equation of the line passing through the point $(-2, 5)$ and perpendicular to the line given by the equation $5x + 10y - 8 = 0$

- A. $y = \frac{1}{2}x + 6$
- B. $y = -2x + 1$
- C. $y = 2x + 9$
- D. $y = -\frac{1}{2}x + 4$
- E. None of the above

25. Write the equation of the vertical line passing through the point $(-5, 6)$

- A. $y = 6$
- B. $x = -5$
- C. $y = -5x + 6$
- D. $x = 6$
- E. None of the above

26. Write the following in logarithmic form (do not solve):

$$10^{3x+1} = 5$$

- A. $3x + 1 = \log(5)$
- B. $3x + 1 = \ln(5)$
- C. $3x + 1 = \log(10)$
- D. $3x + 1 = \ln(10)$
- E. None of the above

27. Given that x, y, z and b are positive numbers, write the following expression in condensed form (as a single log)

$$\log_4(x) - \log_4(y) + 5\log_4(z)$$

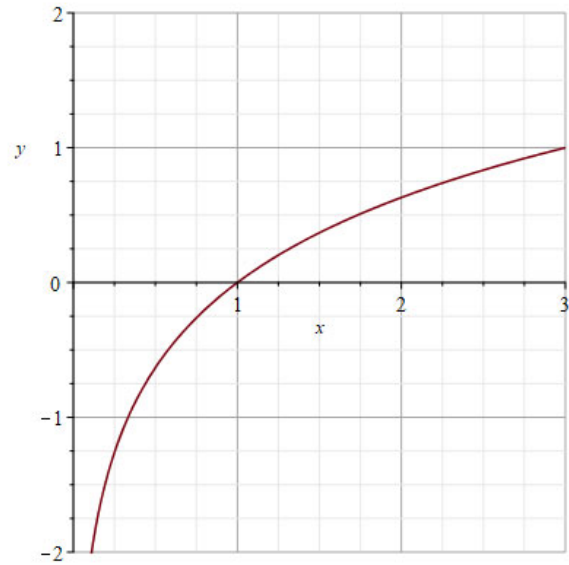
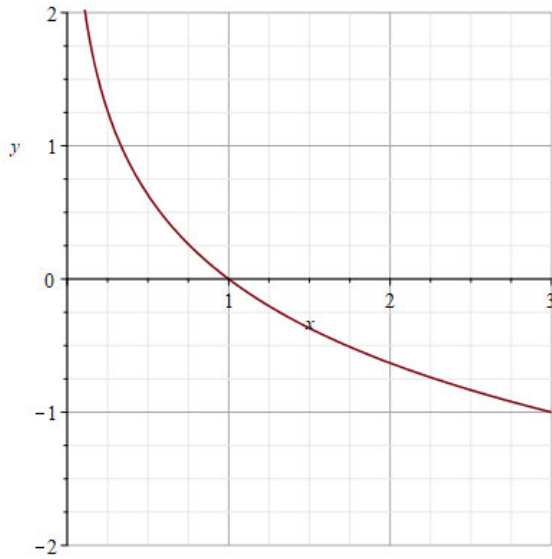
- A. $\log_4(x - y + z^5)$
- B. $\log_4(x - y + 5z)$
- C. $\log_4\left(\frac{x+5z}{y}\right)$
- D. $\log_4\left(\frac{xz^5}{y}\right)$
- E. None of the above

28. Find the domain and graph the following function:

$$f(x) = \log_{\frac{1}{3}} x$$

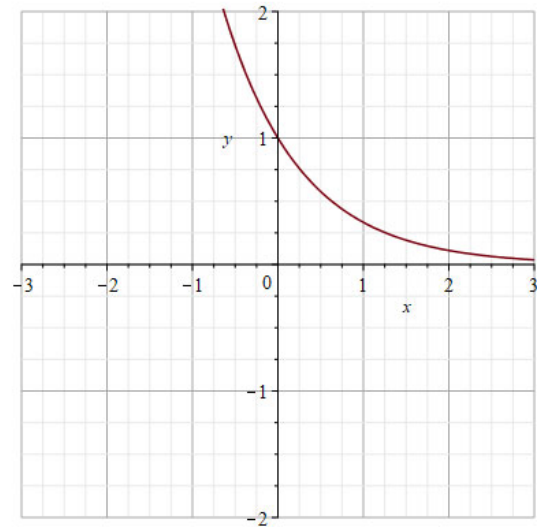
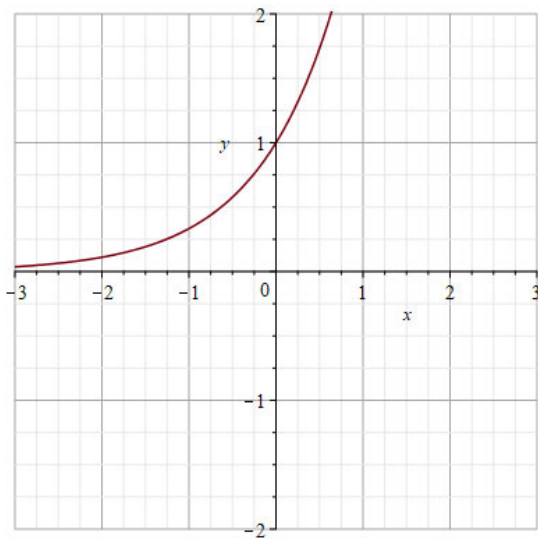
A. Domain $(0, \infty)$

B. Domain $= (-\infty, \infty)$



C. Domain $(-\infty, \infty)$

D. Domain $= (0, \infty)$



E. None of the above

29. Solve the following exponential equation:

$$2^{12-2x} = 64$$

- A. $x = 3$
- B. $x = 6$
- C. $x = 32$
- D. $x = -3$
- E. None of the above

30. Solve the following logarithmic equation:

$$4\ln(e^{2x}) = 64$$

- A. $x = 16$
- B. $x = 8$
- C. $x = 32$
- D. $x = 128$
- E. None of the above

**MATH PLACEMENT TEST FOR BUSINESS
ANSWERS KEY SAMPLE TEST #4**

Question #	Answer	Question #	Answer
1	C	16	D
2	D	17	C
3	B	18	A
4	C	19	D
5	B	20	A
6	C	21	B
7	A	22	C
8	B	23	B
9	B	24	C
10	A	25	B
11	C	26	A
12	B	27	D
13	B	28	A
14	C	29	A
15	B	30	B