

**THIS PLACEMENT TEST IS ONLY FOR:**

- ✓ Business majors
- ✓ Design Management major

**INSTRUCTIONS:**

- ✓ The test consists of 30 multiple choice questions.
- ✓ All types of calculators are NOT allowed.
- ✓ Duration of the exam is 90 minutes (around three minutes per question).

1.  $(5x - 3)(x^3 - 5x + 2) =$
- (a)  $5x^4 - 3x^3 - 25x^2 + 25x - 6$
  - (b)  $5x^4 - 3x^3 + 25x^2 - 5x - 6$
  - (c)  $5x^3 + 22x^2 - 5x - 6$
  - (d)  $5x^3 - 28x^2 + 25x - 6$
  - (e) None of the above
2.  $\left(\frac{x^8y^{-4}z^{-4}}{x^{-4}y^{-8}z^{-4}}\right)^{-\left(\frac{1}{4}\right)} =$
- (a)  $\frac{x^3y}{z}$
  - (b)  $\frac{1}{x^3y}$
  - (c)  $\frac{1}{x^3z}$
  - (d)  $\frac{yz}{x^3}$
  - (e) None of the above
3. If  $\sqrt{\frac{x^4}{x^{-10}}} = x^n$ , then the value of  $n$  is
- (a) 7
  - (b) -7
  - (c) 0
  - (d) 14
  - (e) None of the above
4. Find the width of a rectangle with a perimeter of 132 m and the length is 8 m more than the width
- (a) 37
  - (b) 66
  - (c) 74
  - (d) 29
  - (e) None of the above
5. The domain of the function  $f(x) = \frac{16 - x^2}{4 - x}$  is
- (a) All real numbers except 4 and -4
  - (b) All real numbers except 4
  - (c) All real numbers
  - (d) All real numbers except -4
  - (e) None of the above

6.  $(x - 2y)^3 =$

- (a)  $x^3 - 6x^2y + 12xy^2 - 8y^3$
- (b)  $x^3 + 8y^3$
- (c)  $x^3 - 8y^3$
- (d)  $x^3 + 6x^2y + 12xy^2 + 8y^3$
- (e) None of the above

7.  $\frac{4}{8 - \sqrt{3}} =$

- (a)  $\frac{32 + 4\sqrt{3}}{61}$
- (b)  $\frac{32 - 4\sqrt{3}}{61}$
- (c)  $\frac{32 + 4\sqrt{3}}{5}$
- (d)  $\frac{4}{8} + \frac{4}{\sqrt{3}}$
- (e) None of the above

8.  $\sqrt[3]{-8} =$

- (a) 2
- (b) -2
- (c) 4
- (d) Not a real number
- (e) None of the above

9. If  $N = \frac{d + h + z}{7}$ , then  $h =$

- (a)  $7(N - d - z)$
- (b)  $7N + d + z$
- (c)  $7N + 7d + dz$
- (d)  $7N - d - z$
- (e) None of the above

10. If  $4x + 5 = 13x + 4 - x - 9$ , then  $x =$

- (a)  $\frac{5}{8}$
- (b)  $-\frac{5}{8}$
- (c)  $\frac{5}{4}$
- (d) 0
- (e) None of the above

11. If  $h(x) = 2x^2 + 6x - 9$  and  $k(x) = 3x^2 - 8x + 8$ , then  $h(x) - 2k(x) =$

- (a)  $-4x^2 + 22x - 25$
- (b)  $-4x^2 - 14x + 17$
- (c)  $-4x^2 + 14x - 17$
- (d)  $-4x^2 - 22x + 25$
- (e) None of the above

12. The  $x$ -intercepts of the parabola  $y = x^2 - 5x + 6$  are

- (a) 6
- (b) -6
- (c) 2 and 3
- (d) -2 and -3
- (e) None of the above

13.  $3 \times 10^{-4} =$

- (a) 30000
- (b) 3000
- (c) 0.003
- (d) 0.0003
- (e) None of the above

14.  $\frac{(7 + 5)}{\left(\frac{1}{2}\right)} =$

- (a) 24
- (b) 12
- (c) 6
- (d) 18
- (e) None of the above

15. If one phone costs  $\$x$  and two cameras cost  $\$x$ , then 5 phones and 4 cameras will cost

- (a)  $\$6x$
- (b)  $\$7x$
- (c)  $\$8x$
- (d)  $\$7.5$
- (e) None of the above

16. If  $y = 2$ , then  $\frac{5}{y^{-2}} =$

- (a)  $\frac{5}{4}$
- (b)  $\frac{5}{-4}$
- (c) 20
- (d)  $-20$
- (e) None of the above

17.  $\frac{\frac{2}{x} + \frac{4}{y}}{2x + y} =$

- (a)  $\frac{2}{xy}$
- (b)  $\frac{1}{xy}$
- (c)  $\frac{4}{xy}$
- (d)  $\frac{2}{x + y}$
- (e) None of the above

18.  $\frac{3x}{x - 1} \times \frac{x + 1}{x^2 + x} =$

- (a)  $\frac{3}{x + 1}$
- (b)  $\frac{3}{x - 1}$
- (c)  $\frac{3}{x^2 + 1}$
- (d)  $\frac{3}{x^2 + x}$
- (e) None of the above

19. The solution for  $\frac{x}{x+4} + \frac{3}{x} = 1$  is  $x =$

- (a) 5
- (b) 6
- (c) 2
- (d) 12
- (e) None of the above

20.  $|3 - \pi| =$

- (a)  $3 - \pi$
- (b) 0
- (c) 1
- (d)  $\pi - 3$
- (e) None of the above

21. The solution set for  $3x + 2 \geq 5x + 10$  is

- (a)  $x \geq 4$
- (b)  $x \leq 4$
- (c)  $x \leq -4$
- (d)  $x \geq -4$
- (e) None of the above

22. The solution set for  $x^2 + 5x = 0$  is

- (a)  $\{0, -5\}$
- (b)  $\{0\}$
- (c)  $\{-5\}$
- (d)  $\{0, 5\}$
- (e) None of the above

23. The slope of the line  $y = \frac{-1}{2}x + \frac{2}{3}$  is

- (a) 2
- (b) -2
- (c)  $1/2$
- (d)  $-1/2$
- (e) None of the above

24. The solution set for  $x^2 + 9 = 0$  is
- (a)  $\{-3, 3\}$
  - (b)  $\{-3\}$
  - (c)  $\{3\}$
  - (d) The equation has no real solution
  - (e) None of the above

25. The solution for  $|x| = 1$  is  $x =$
- (a) 1
  - (b) -1
  - (c)  $\{1, -1\}$
  - (d) The equation has no real solution
  - (e) None of the above

26. If  $y = e^{3x+2}$  then  $x =$

- (a)  $\frac{\ln(y) + 2}{3}$
- (b)  $\frac{\ln(y) - 2}{3}$
- (c)  $\frac{2 - \ln(y)}{3}$
- (d)  $\frac{2 \ln(y)}{3}$
- (e) None of the above

27. If  $x, y > 0$  then  $\ln\left(\frac{3x^5}{y^3}\right) =$

- (a)  $\ln 3 + 5 \ln x - 3 \ln y$
- (b)  $\ln 3 + 5 \ln x + 3 \ln y$
- (c)  $\ln 3 - 5 \ln x - 3 \ln y$
- (d)  $\ln 3 - 5 \ln x + 3 \ln y$
- (e) None of the above

28. If  $7^{0.5x} = 20$ , then  $x =$

- (a)  $20/7$
- (b)  $2 \log_{10} 20$
- (c)  $2 \log_{20} 7$
- (d)  $2 \log_7 20$
- (e) None of the above

29. If  $y = \ln(x + 2)$ , then  $x =$

- (a)  $e^y + 2$
- (b)  $e^y - 2$
- (c)  $e^{2y}$
- (d)  $2 - e^y$
- (e) None of the above

30. If  $x = 100$ , then  $\log_{10}(x^{2018}) =$

- (a) 2018
- (b) 1000
- (c) 4036
- (d) 1009
- (e) None of the above



## Answer Key

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