

THIS PLACEMENT TEST IS ONLY FOR:

- ✓ Architecture/Interior Design majors
- ✓ Computer Science majors
- ✓ All Engineering majors
- ✓ Environmental Science/Biology/Chemistry majors
- ✓ Mathematics majors

INSTRUCTIONS:

- ✓ The test consists of 30 multiple choice questions.
- ✓ Graphing calculators are not allowed. Only basic scientific calculators of the following types are allowed in the exam:
 - fx-82E(or M)S (PLUS)
 - fx-85E(or M)S (PLUS)
 - fx-350E(or M)S (PLUS)
- ✓ 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. $\left(\frac{x^8 y^{-4} z^{-4}}{x^{-4} y^{-8} z^{-4}}\right)^{-\left(\frac{1}{4}\right)} =$
 - (a) $\frac{x^3 y}{z}$
 - (b) $\frac{1}{x^3 y}$
 - (c) $\frac{1}{x^3 z}$
 - (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