

Sample Questions for Math Placement Test

LEVEL 2

11. If $3 - 4y = 5x - 6$, then $y =$

- A. $-\frac{5x+9}{4}$
- B. $-\frac{5x-9}{4}$
- C. $-\frac{5}{4}x + 9$
- D. $-\frac{5}{4}x - 9$
- E. $-\frac{5x-3}{4}$

12. $(3x - 7y)^2 =$

- A. $9x^2 + 49y^2$
- B. $9x^2 - 21xy + 49y^2$
- C. $9x^2 - 42xy + 49y^2$
- D. $9x^2 - 49y^2$
- E. $6x^2 - 14y^2$

13. $\sqrt{8a^8} =$

- A. $4a^2$
- B. $4a^4$
- C. $2\sqrt{2}a^2$
- D. $2\sqrt{2}a^4$
- E. $4a^8$

14. $-3x^2y(xy^2 - 2y - 1) =$

- A. $-3x^2y^2 + 9x^2y$
- B. $-3x^3y^3 + 6x^2y^2 + 3x^2y$
- C. $-3x^3y^3 + 6x^2y^2 - 1$
- D. $-3x^3y^3 + 2y - 1$
- E. $-3x^3y^3 - 6x^2y^2 - 3x^2y$

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

- A. $\frac{x-3}{x+1}$
- B. $\frac{x+3}{x+1}$
- C. $3 - 2x$
- D. $\frac{x-3}{x-1}$
- E. $\frac{x+3}{x-1}$

16. The solution to $x^2 - x - 6 > 0$ is

- A. $-3 < x < 2$
- B. $x < -3$ or $x > 2$
- C. $-2 < x < 3$
- D. $x < -2$ or $x > 3$
- E. $x > 3$

17. The perimeter of a rectangle is nine times its width. If the width is 20, the length is

- A. 25
- B. 90
- C. 70
- D. 80
- E. 45

18. $\frac{1}{2x-y} - \frac{2}{x+2y} =$

- A. $\frac{-1}{x-3y}$
- B. $\frac{4y-3x}{2x^2-2y^2}$
- C. $\frac{3y-3x}{2x^2+3xy-2y^2}$
- D. $\frac{4y-3x}{2x^2+xy-2y^2}$
- E. $\frac{4y-3x}{2x^2+3xy-2y^2}$

19. If $f(x) = \frac{4x}{1-x}$ and $g(x) = \frac{2}{x}$, then $f(g(x)) =$

- A. $\frac{8}{x-2}$
- B. $\frac{8}{1-x}$
- C. 4
- D. $\frac{1-x}{2x}$
- E. $\frac{8(x-2)}{x^2}$

20. $\frac{\sqrt{a}}{1+\sqrt{a}} =$

- A. $\frac{\sqrt{a}+a}{1+a}$
- B. $\frac{\sqrt{a}-a}{1-a}$
- C. 1
- D. $\frac{\sqrt{a}-a}{1-a^2}$
- E. $\frac{a}{1+a}$

LEVEL 3

21. If $g(x) = \log_3 x$, then $g(\frac{1}{3}) =$

- A. 1
- B. $\frac{1}{3}$
- C. -3
- D. -1
- E. $3^{1/3}$

22. If $0 < \theta < \frac{\pi}{2}$ and $\sin(\theta) = \frac{2}{5}$, then $\tan(\theta) =$

- A. $\frac{2}{3}$
- B. $\frac{2}{\sqrt{29}}$
- C. $\frac{2}{\sqrt{21}}$
- D. $\frac{2}{\sqrt{3}}$
- E. $\frac{2}{7}$

23. $2 \cos^2 \theta + \sin^2 \theta - 1 =$

- A. $\cos^2 \theta$
- B. $1 + 3 \sin^2 \theta$
- C. 1
- D. $3 \sin^2 \theta$
- E. $3 \cos^2 \theta$

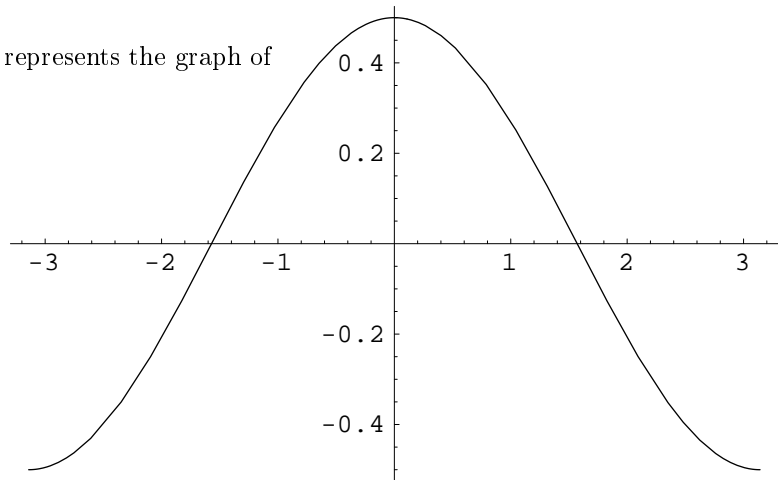
24. If $\ln A = \frac{3}{2}$ and $\ln B = 5$, then $\ln\left(\frac{A^2}{B}\right) =$

- A. $\frac{3}{5}$
- B. $\frac{9}{20}$
- C. $-\frac{11}{4}$
- D. -2
- E. e^{-2}

25. $\frac{3y}{27y^{n-1}} =$

- A. $\frac{1}{9}y^n$
- B. $-24y^{\frac{1}{n-1}}$
- C. $9y^n$
- D. $\frac{1}{9}y^{n-1}$
- E. $\frac{1}{9}y^{2-n}$

26. The figure best represents the graph of



- A. $y = \frac{1}{2} \cos(x)$
- B. $y = \cos\left(\frac{x}{2}\right)$
- C. $y = \cos(2x)$
- D. $y = \frac{1}{2} \sin(x)$
- E. $y = \sin\left(\frac{x}{2}\right)$

27. How many values of x in $[0, 2\pi]$ satisfy $\sin(2x) = 0$?

- A. 2
- B. 3
- C. 4
- D. 5
- E. 6

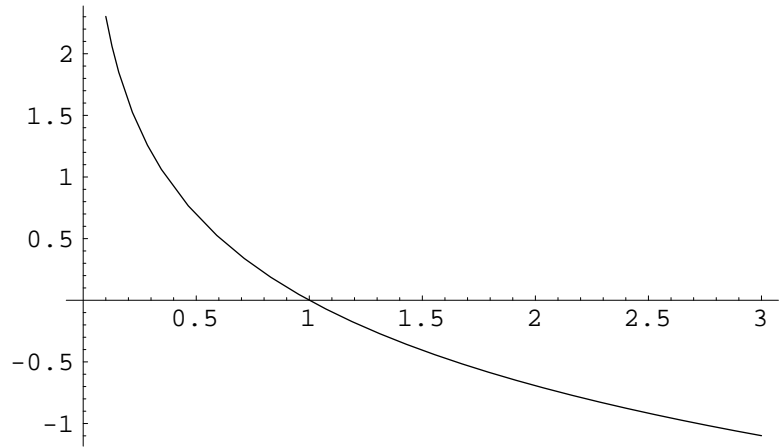
28. The solution of $|7x - 4| \geq 3$ is

- A. $x \geq 1$
- B. $x \geq \frac{1}{7}$
- C. $x \leq \frac{1}{7}$
- D. $x \leq \frac{1}{7}$ or $x \geq 1$
- E. $\frac{1}{7} \leq x \leq 1$

29. $\tan(\theta - \pi) =$

- A. $\tan \theta$
- B. $\cot \theta$
- C. $\sec \theta$
- D. $-\cot \theta$
- E. $-\tan \theta$

30. The graph best represents



- A. $y = \ln x$
- B. $y = e^x$
- C. $y = e^{-x}$
- D. $y = -\ln x$
- E. $y = \frac{1}{x}$