

Review For Math Placement Test

To help prepare for the math placement test, try some of the 50 sample problems below without using a calculator. Reviewing this material before taking the placement test may improve your placement score. Answers are provided at the end of the test.

Perform the operations:

- | | |
|---|---|
| 1. 296×87 | 2. $2,853 \div 9$ |
| 3. $3.4 + 0.79 + 1.665$ | 4. $8.01 - 2.782$ |
| 5. 4.7×0.539 | 6. $0.6824 \div 0.04$ |
| 7. $\frac{3}{8} + \frac{7}{12}$ | 8. $6\frac{5}{12} - 2\frac{3}{4}$ |
| 9. $\frac{28}{36} \times \frac{42}{56}$ | 10. $\frac{14}{55} \div \frac{21}{120}$ |

11. The number of parking tickets handed out at BCCC was twice the number of tickets handed out last year. The number of tickets handed out this year was what percent of the number handed out last year?

12. If $x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$, find the value of x if $a = 2$, $b = 8$, and $c = -5$.

13. The length of a rectangle is 5.25 ft and its width is 3.10 ft. What is the area of this rectangle?

14. A pair of shoes sells for \$45. If the price was reduced by 25%, what was the original price?

Simplify:

- | | |
|---|--|
| 15. $(5a^2 - 3a + 9) - (20a^2 + 11a - 6)$ | |
| 16. $-2x(8x - y + 14) + 4x(10x + 4y - 9)$ | |
| 17. $(24c^3 - 36c^2 + 48c) \div 12c$ | 18. $\sqrt{144} + \sqrt[3]{64} + \sqrt[4]{16}$ |
| 19. $\sqrt{10}\sqrt{15}$ | 20. $(5x^3y^5z)(-2x^7yz^2)$ |
| 21. $\frac{36a^5b^2c}{48a^2b^6c^3}$ | 22. $(-2c^2d^3)^4$ |
| 23. $(3y + 5)^2 - (3y - 5)^2$ | |

Factor:

- | | |
|-----------------------------|---------------------|
| 24. $x^2 - 2x - 48$ | 25. $25x^2 - 36y^2$ |
| 26. $20x^2 - 35xy - 15xy^2$ | |

Combine and simplify:

- | | |
|----------------------------------|---|
| 27. $\frac{3}{2x} + \frac{2}{x}$ | 28. $\frac{5}{3x - 12} - \frac{4}{x - 4}$ |
|----------------------------------|---|

Solve:

- | | |
|-------------------------------------|---|
| 29. $2(y - 7) - 16 = 31 - (5y - 4)$ | 30. $8[2(c + 4) - (3c - 9)] = c - 24$ |
| 31. $ 2x - 7 = 13$ | 32. $\frac{7x - 20 - (4x + 6)}{4x + 12} \leq 2(6x + 5)$ |
| 33. $2x^2 - 5x + 3 = 0$ | 34. $\frac{4x + 12}{2x - 3} = -\frac{2}{3}$ |

35. If a circle has center $(-2, 5)$ and the point $(-6, 2)$ is a point on the circle, what is the radius of this circle?

36. Find the simultaneous solution to the pair of equations
- $$2x + 5y = 1$$
- $$3x - 4y = 13$$

37. Simplify the complex fraction $\frac{\frac{9}{y^2} - \frac{1}{x^2}}{\frac{3}{y} + \frac{1}{x}}$.

38. Simplify $\frac{x^4 - 5x^3 - 6x^2}{2x^2 - 13x + 6} \cdot \frac{6x^2 - x - 1}{9x^3 - x}$.

39. If $f(x) = 2x^2 - 3x$ find $f(a + b)$.

40. Write $\log_a x + \log_a y - 2\log_a z$ using just one log term.

41. If $f(x) = x^2 - 4x$ and $g(x) = 2x - 3$, find $f(g(x))$ and $g(f(x))$.

42. If $x - 6 < 0$ then $|x - 6| + x - 6 =$
 a) 0 b) $2x - 12$ c) x d) $2x$ e) -12

43. If $y = 4^x$ and $y^3 = q$, then $q =$
 a) 4^{x+3} b) $4^{x/3}$ c) 12^x d) 64^x e) $\sqrt[3]{4^x}$

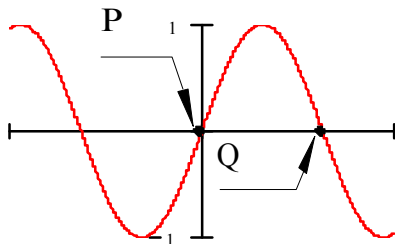
44. If $f(x) = 2x + 17$ then $f^{-1}(x) =$
 a) $2x - 17$ b) $\frac{x+17}{2}$ c) $\frac{x-17}{2}$ d) $\frac{1}{2x+17}$ e) $\frac{1}{2x-17}$

45. If the graph of $f(x)$ is symmetric with respect to the y -axis, and $f(6) = 2$, which of the following must be true?
 a) $f(6) = -2$ b) $f(-6) = 2$ c) $f(-6) = -2$ d) $f(2) = 6$
 e) $f(-2) = 6$

46. $\frac{1 - \sin^2 x}{\sin x} \cdot \frac{\tan x}{\cos^2 x}$ reduces to
 a) $\cos x$ b) $\sin x$ c) $\cos^2 x$ d) $\sec x$ e) $\csc x$

47. Which of the following equations has a graph which is a parabola with vertex $(2, -4)$?
 a) $y = (x+2) - 4$ b) $y = (x+2)^2 + 4$ c) $(x-2)^2 + (y+4)^2 = 1$
 d) $y = (x-2)^2 - 4$ e) $(x+2)^2 + (y-4)^2 = 1$

48. Shown below is the graph of $y = \sin(x/4)$.

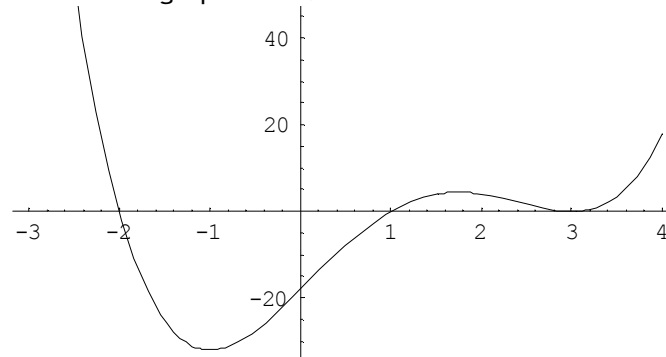


What is the distance from point P to point Q?

- a) $\pi/8$ b) $\pi/4$ c) π d) 2π e) 4π

49. If $\log_a N = b$ then which of the following must be true?
 a) $N = b^a$ b) $N = a^b$ c) $a = N^b$ d) $a = b^N$ e) $b = N^a$

50. Consider the graph below.



Which of the following functions could have this graph?

- a) $y = (x+2)(x-1)(x-3)$ b) $y = (x-2)(x+1)(x+3)$
 c) $y = (x+2)(x-1)(x-3)^2$ d) $y = (x-2)(x+1)(x+3)^2$
 e) $y = (x+2)^2(x-1)^2(x-3)^2$

Answers: 1. 25,752 2. 317 3. 5.855 4. 5.228 5. 2.5333 6. 17.06 7. 23/24

8. $3\frac{2}{3}$ 9. $7/12$ 10. $16/11$ 11. 200% 12. $\frac{-4 + \sqrt{26}}{2}$ 13. 16.275
 14. \$60 15. $15 - 14a - 15a^2$ 16. $24x^2 - 64x + 18xy$ 17. $2c^2 - 3c + 4$
 18. 18 19. $5\sqrt{6}$ 20. $-10x^{10}y^6z^3$ 21. $\frac{3a^3}{4b^4c^2}$ 22. $16c^8d^{12}$ 23. $60y$
 24. $(x-8)(x+6)$ 25. $(5x+6y)(5x-6y)$ 26. $5x(4x-7y-3y^2)$ 27. $\frac{7}{2x}$
 28. $\frac{-7}{3(x-4)}$ 29. $y = 65/7$ 30. $c = 160/9$ 31. $x = 10, -3$ 32. $x \geq -4$
 33. $x = 1, 3/2$ 34. $x = -15/8$ 35. 5 36. $x = 3, y = -1$ 37. $\frac{3x-y}{xy}$
 38. $\frac{x(x+1)}{3x-1}$ 39. $2a^2 + 4ab + 2b^2 - 3a - 3b$ 40. $\log_a \frac{xy}{z^2}$
 41. $f(g(x)) = 4x^2 - 20x + 21, g(f(x)) = 2x^2 - 8x - 3$ 42. A 43. D 44. C
 45. B 46. D 47. D 48. E 49. B 50. C