Practice Test for Math Placement Test

1. Solve this equation for x: $x = 2 + \sqrt{2 - x}$

2. The solution set of $(x - 1)(x + 3)(x - 4) > 0$ is _____.

3. Find the vertex of the parabola $y = -x^2 + 6x - 5$ and state whether it is a maximum or minimum.

4. Find the solution set to the following: $x^2 + 3x - 3 = 0$.

5. Solve the system: $\begin{array}{l} 2x - y = 4 \\ 6x + 3y = 24 \end{array}$

6. A line parallel to $y = \dfrac{1}{5}x$ through the point $\left(-4, -\dfrac{29}{5}\right)$ is _____.

7. Solve for y: $\dfrac{3}{y - 2} + \dfrac{y + 2}{2} = \dfrac{y^2 + 2}{y + 3}$.

8. $\dfrac{x^4 + 5x^3 - 5}{x^2 - 3}$ gives a remainder of _____.

9. Is $x^2 + y^2 = 9$ a function?

10. Given $f(x) = |x|$, determine if $f(x)$ is even, odd, or neither, and if $f(x)$ is increasing or decreasing.

11. If $f(x) = \sqrt{x + 1}$ then the domain of $f(x)$ is _____.

12. Given the set $\{(1,2), (2,2), (3,1)\}$, find the domain of the inverse of this set, and tell if the inverse is a function.

13. The solution set of $|2x + 7| < 21$ is _____.

14. π belongs to which of the following sets: integers, rational numbers, irrational numbers, real numbers.

15. The product $(8 + 3i)(4 - 7i) =$ _____.

16. $(-27)^{2/3} \div (81)^{1/2} =$ _____.

17. Solve this system for y:

$$2x + y + z = 7$$
$$x + 3y + z = 10$$
$$x + y + 4z = 15$$

18. Solve the following for x: $4x^2 - 5x - 12 = 0$.

19. $\left[\left[A^{2/3}\right]^{3/2}\right]^{1/2}$ is A to what power?

Answer Key

1. $x = 2$ (1 is an extraneous solution)

2. $(-3,1) \cup (4, \infty)$

3. $(3,4)$, maximum

4. $\left(\dfrac{-3 \pm \sqrt{21}}{2} \right)$

5. $(x, y) = (3,2)$

6. $y = \dfrac{1}{5}x - 5$

7. $y = 7$

8. $15x + 4$

9. No

10. $f(x)$ is an even function and is increasing on $[0, \infty)$ and decreasing on $(-\infty, 0]$.

11. $\{x \mid x \geq -1\}$

12. The domain of the inverse is $\{1,2\}$ and the inverse is not a function.

13. $-14 < x < 7$

14. Irrational numbers and real numbers

15. $53 - 44i$

16. 1

17. $y = 2$

18. $\dfrac{5 \pm \sqrt{217}}{8}$

19. $\dfrac{1}{2}$