1) The **number** of solution(s) of the equation $\frac{3}{x+4} - \frac{1}{x} = \frac{1}{x} + \frac{6x+12}{x^2+4x}$ is

A) 0

B) 1

C) 2

D) 3

E) 4

2) If $16x^2 + 36a^4 - 48a^2x = 9$, then one value of x is equal to

A) $\frac{3}{4}(2a^2 - 1)$

B) $\frac{3}{2}(2a^2 - 1)$

C) $\frac{1}{2}(2a^2 + 1)$

D) $\frac{1}{4}(2a^2 + 1)$

E) $3(2a^2 + 1)$

3) If (a, b) is a point on the y–axis that is **equidistance** (*equal distance*) from the points $(5, -5)$ and $(1, 1)$, then $a + b =$

A) -4

B) 4

C) 6

D) 5

E) -5

4) The **distance** between the **midpoint** of the line segment joining the points $(0, 8)$, $(6, 16)$ and the center of the circle $(x + 1)^2 + (y - 9)^2 = 4$, is

A) 5

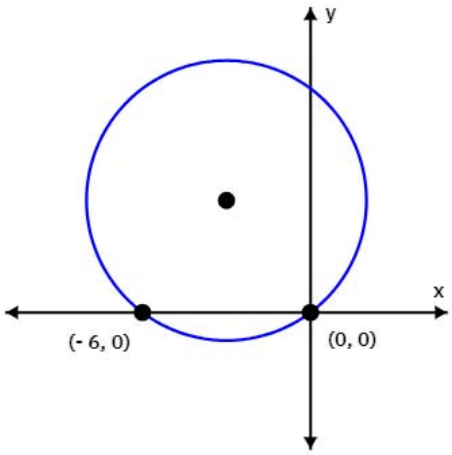
B) 4

C) $3\sqrt{2}$

D) $\sqrt{13}$

E) $\sqrt{26}$

5) An equation of the circle centered at $(-3, 4)$ in the graph below, is



A) $x^2 + y^2 + 6x - 8y = 0$

B) $x^2 + y^2 - 6x + 8y = 0$

C) $x^2 + y^2 + 6x - 8y - 25 = 0$

D) $x^2 + y^2 - 6x + 8y - 25 = 0$

E) $x^2 + y^2 + 6x - 8y + 25 = 0$

6) Which one of the following lines is NOT parallel nor perpendicular to the line $7x - 3y = 2$?

A) $9y + 21x = 1$

B) $14x = 6y + 3$

C) $y - \frac{7}{3}x = 4$

D) $\frac{7}{3}y + x = 2$

E) $y = \frac{5 - 3x}{7}$

7) If $x = \frac{1}{2}$ is one of the solutions of the quadratic equation $4x^2 + bx - 9 = 0$, then the other solution is

A) $x = -\frac{9}{2}$

B) $x = \frac{2}{9}$

C) $x = \frac{9}{2}$

D) $x = -\frac{1}{2}$

E) $x = \frac{1}{2}$

8) If 1 and $-\frac{3}{2}$ are the roots of the quadratic equation $ax^2 + x + c = 0$, then $a + c =$

A) -1

B) 1

C) -5

D) 5

E) $-\frac{1}{2}$

9) If the sum of four times a number and eight is equal to two times the sum of the number and three, then the number is

A) -1

B) -2

C) -4

D) 2

E) $-\frac{5}{3}$

10) If $\frac{(1+2i)(3-i)}{2+i} + i^{1002} = a + b\,i$, then $a + b =$

A) 3

B) 5

C) 4

D) 6

E) 1

11) The imaginary part of the complex number $\sqrt{-8}\cdot\sqrt{-2} + \sqrt{-1}\,(1+6i)$, is

A) 1

B) 6

C) -1

D) -10

E) -6

12) The **product** of all the solution(s) of $\left(\frac{1}{x+1}\right)^2 - 2\left(\frac{1}{x+1}\right) = 8$, is equal to

A) $\frac{9}{8}$

B) $-\frac{9}{4}$

C) $\frac{3}{4}$

D) -8

E) 2

13) The equation $\sqrt{x-2} = \sqrt{x} - 4$ has

A) no solution

B) one positive real number only

C) one negative real number only

D) two positive real numbers

E) one positive and one negative real numbers

14) If $[a, b]$ is the **solution set** of the inequality $-4 \le \frac{3x-1}{2} \le 4$, then $a \cdot b =$

A) -7

B) 3

C) 6

D) $-\frac{2}{3}$

E) $\frac{2}{3}$

15) If $x^2|y| + y|x^2| = 0$, then

A) $x = 0$ or $y \leq 0$

B) $x = 0$ or $y > 0$

C) $x < 0$ or $y \leq 0$

D) $x > 0$ or $y \geq 0$

E) $x < 0$ or $y > 0$

16) The solution set of the absolute value inequality $|x|^2 + |x| \geq 2$, is

A) $(-\infty, -1] \cup [1, \infty)$

B) $(-\infty, -2] \cup [1, \infty)$

C) $(-\infty, -2] \cup [2, \infty)$

D) $(-\infty, -1]$

E) $(-\infty, -2]$

17) The **range** of the function $f(x) = \begin{cases} 1, & \text{if } x > 0 \\ x, & \text{if } x \le 0 \end{cases}$

A) $(-\infty, 0] \cup \{1\}$

B) $(-\infty, 0) \cup \{1\}$

C) $(-\infty, 1]$

D) $(-\infty, 0)$

E) $(-\infty, 0) \cup (1, \infty)$

18) The **domain** of the function $f(x) = \sqrt{\frac{1}{x} - 1}$, is

A) $(0, 1]$

B) $(-\infty, 0) \cup [1, \infty)$

C) $(-\infty, 0)$

D) $(-\infty, 0) \cup (0, \infty)$

E) $[-1, 0) \cup (0, 1]$

19) If $[\![\ ]\!]$ denote the greatest integer function, then the set of all x–intercepts of $y = [\![2x + 1]\!] + 1,$ is

A) $[-1, -1/2)$

B) $(-2, -1]$

C) $[-1/2, 0)$

D) $(-1/2, 0]$

E) $(0, 1/2]$

20) The relation $y^2 - 1 = x$ is a function if

A) $y < 0$

B) $x < 0$

C) $x > 0$

D) $x > -1$

E) $y > -1$

Answer Key
Testname: MATH001_E2_241

1) A
2) A
3) A
4) A
5) A
6) A
7) A
8) A
9) A
10) A
11) A
12) A
13) A
14) A
15) A
16) A
17) A
18) A
19) A
20) A