1) If $x^2 + y^2 + ax + by + c = 0$ is the equation of the circle whose center is in the second quadrant, radius 5 and tangent to both the x-axis and the y-axis , then $a + b + c =$

A) 5

B) 25

C) 20

D) 10

E) 45

2) When completing the square in the equation $3x(x - 4) + 6 = 0$, we get $(x + a)^2 = b$, then $a + b =$

A) 10

B) 4

C) - 8

D) 0

E) 8

3)

If $\frac{(210000)(4\times10^{-12})}{0.000028} = m\times10^{n}$ (in scientific notation), then $m + n =$

A) - 2

B) 1

C) 2

D) 0

E) - 1

4) The sum of the solution(s) of the equation $2x^{\frac{5}{3}} + 64 = 0$ is equal to

A) - 8

B) 0

C) 16

D) 8

E) - 16

5) The number of irrational numbers in the set

$\{5.3\ ,\ 1.234\overline{7632}\ ,\ \sqrt{\frac{7}{4}}\ ,\ -132\ ,\ 2\frac{13}{14}\ ,\ \sqrt[3]{-27},\ -\frac{20}{5},\ \frac{44}{14},\ \frac{2\pi}{3.14},\ \frac{0}{\sqrt{8}}\ ,\ \frac{22}{7}-\pi\}$ is

A) 4

B) 3

C) 1

D) 2

E) 5

6) $\left[-5+\frac{19}{3}-\left(-\frac{2}{3}\right)\right]\div\left(\frac{1}{2}-\frac{1}{3}\right)\cdot\left(-2^2\div 16\right)=$

A) 3

B) $-\frac{9}{2}$

C) -3

D) $\frac{9}{2}$

E) -6

7) $\left[1 - \frac{5x - 7}{x^2 - 1}\right] \div \frac{x - 3}{x^2 - 1} =$

A) $x + 3$

B) $x - 3$

C) $x - 1$

D) $x + 2$

E) $x - 2$

8) $\frac{1}{\sqrt[3]{\sqrt{(\sqrt{3} - 2)^6}}} =$

A) $2 + \sqrt{3}$

B) $2 - \sqrt{3}$

C) $-3 + \sqrt{3}$

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

E) $-2 + \sqrt{3}$

9) The solution set of the equation $\frac{1}{2}x + 2 - \frac{1}{3}x = \frac{10}{3}$ consists of

A) one negative even integer

B) one non integer rational number

C) one positive even integer

D) one negative odd integer

E) one positive odd integer

10) Let $x > 0$ and $y > 0$. If $\left(2x^{-\frac{1}{2}}y^{2}\right)^{3}\left(\frac{1}{2}x^{\frac{1}{4}}y^{-1}\right)^{2} = mx^{p}y^{q}$, then $m + p + q =$

A) 3

B) 8

C) 6

D) 5

E) 4

11) If $x_1 < x_2$ are the solutions of the equation $6x(1 - x) = x + 1$, then $6x_1 - 2x_2 =$

A) 0

B) 1

C) 2

D) - 1

E) - 2

12) If (h, k) is the center and r is the radius of the circle $2x^2 + 2y^2 - 8x + 20y + 26 = 0$, then $h + k + r =$

A) - 3

B) 1

C) 7

D) 3

E) 13

13) One factor of the polynomial $8x^4 - 8x^3 + x - 1$, is

A) $4x^2 + 2x - 1$

B) $4x^2 - x - 2$

C) $4x^2 - 2x + 1$

D) $4x^2 + 1$

E) $4x^2 + 2x + 1$

14) If $(0, b)$ is a point on the y-axis that is equidistant (equal distance) from the points $(3, -3)$ and $(1, 1)$, then $b =$

A) - 8

B) 4

C) 8

D) - 2

E) - 4

15) $\dfrac{\left(1+2x^2\right)^{\frac{1}{3}} - \left(x^2-1\right)\left(1+2x^2\right)^{-\frac{2}{3}}}{\left(1+2x^2\right)^{-\frac{2}{3}}} =$

A) $x^2 - 1$

B) 1

C) x^2

D) $x^2 + 1$

E) $x^2 + 2$

16) Let $A = \{-3, -1, 0, 1, 3\}$, $B = \{x \mid x \text{ is a whole number such that } x < 7\}$ and $C = \{-2, 0, 2, 4, 6\}$, then $A \cap (B \cup C) =$

A) $\{0, 1, 3\}$

B) $\{3\}$

C) $\varnothing$

D) $\{1, 3\}$

E) $\{-3, -1, 0, 1, 2, 3, 4, 6\}$

17) Let x, y and z be positive real numbers .
If $\sqrt{72\,x^5y^5z} - x^2y\sqrt{8\,xy^3z} = k\,x^m y^n \sqrt{2xyz}$, then $k + m + n =$

A) 9

B) 11

C) 12

D) 8

E) 10

18) If $(0\,,\,b)$ is the y-intercept of the line that is perpendicular to the line $2x + 3y - 5 = 0$ and passes through the point $(2, -1)$, then $b =$

A) 4

B) -4

C) -2

D) $\frac{8}{3}$

E) $-\frac{8}{3}$

19) If $\dfrac{1 - \dfrac{3}{x+4}}{\dfrac{1}{x+4} + \dfrac{x}{3}} = \dfrac{ax+3}{x+b}$, then $a + b =$

A) 2

B) 3

C) 1

D) 6

E) 4

20) If $(2x+3)(2x-3) - (3x-2)^2 = ax^2 + bx + c$, then $a + b + c =$

A) - 10

B) - 6

C) 7

D) - 12

E) - 22

Answer Key
Testname: MAJOR #1 MATH 001 TERM 212 CODE 001

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