MATH 095 Sample 02 Exam 1

For each problem, show your work in the space provided.
Write your Final Answer (and the letter answer) on the Answer Sheet provided.

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Factor:

1. $x^2 - 25$

    [A] $(x+5)(x-5)$ [B] $(x+5)(x+5)$ [C] $(x-5)(x-5)$ [D] $(x+5)(x-7)$

2. $16x^2 - 81y^2$

    [A] $(4x+9)(4x-9)$ [B] $(4x+9y)^2$ [C] $(4x-9y)^2$ [D] $(4x+9y)(4x-9y)$

3. $14tu - 21u - 4ty + 6y$

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Factor:

4. $35m^2 + 18m - 8$

   [A] $(7m - 2)(5m + 4)$ [B] $(7m + 2)(5m - 4)$

   [C] $(7m + 2)(5m + 4)$ [D] $(7m - 2)(5m - 4)$

Solve:

5. $x^2 - 3x = 0$ [A] 3, –3   [B] 0, 3   [C] 3, –4   [D] 0, –3

6. $3x^2 + 10x = 8$ [A] $\left\{-4, \dfrac{3}{2}\right\}$ [B] $\left\{4, -\dfrac{3}{2}\right\}$ [C] $\left\{-4, \dfrac{2}{3}\right\}$ [D] $\left\{4, -\dfrac{2}{3}\right\}$

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Factor:

7. $40x^2 - 18x - 40$

   [A] $-2(4x+5)(5x+4)$ [B] $2(4x-5)(5x+4)$

   [C] $-2(4x-5)(5x+4)$ [D] $2(4x+5)(5x-4)$

8. $35k^4m^3 + 30km^2$

   [A] $5(7k^4m^3 + 6km^2)$ [B] $5km^2(7k^3m + 6)$

   [C] $5km(7k^3m^2 + 6m)$ [D] $5km^2(7k^3m - 6)$

9. Which of the following is a factor of $20x^2 - 21x + 4$?

   [A] $(4x+1)$ [B] $(5x+4)$ [C] $(4x-1)$ [D] $(5x-1)$

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Factor:

10. $25x^2 + 40xy + 16y^2$

11. $r^3 + 64$

12. $6x^2 - 19xy + 10y^2$

    [A] $(3x + 2y)(2x + 5y)$ [B] $(3x - 2y)(2x + 5y)$

    [C] $(3x + 2y)(2x - 5y)$ [D] $(3x - 2y)(2x - 5y)$

13. $x^2 - 8x + 16$

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14. Subtract: $-\dfrac{6}{x^2-10x+25}-\dfrac{5}{x-5}$

[A] $\dfrac{-5x+19}{x^2-10x+25}$ [B] $\dfrac{-5x-31}{x^2-10x+25}$ [C] $-\dfrac{11}{x^2-11x+30}$ [D] $\dfrac{-5x-11}{x^2-10x+25}$

15. Simplify: $\left(4x^3y^{-5}\right)^{-3}$ [A] $\dfrac{y^{15}}{64x^9}$ [B] $\dfrac{y^{15}}{12x^3}$ [C] $\dfrac{-12x^3}{y^{15}}$ [D] $\dfrac{64x^9}{y^{15}}$

16. It is known that a cyclist can travel 13.6 mi in 1 hr. How far can the same cyclist travel in 3 hr?

[A] 39 mi   [B] none of these   [C] $40\dfrac{1}{5}$ mi   [D] $40\dfrac{4}{5}$ mi

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17. Simplify: $\dfrac{\dfrac{x^2+18x+81}{-8x}}{\dfrac{x+9}{-4x}}$ [A] $\dfrac{x+9}{2}$ [B] $\dfrac{x-9}{2}$ [C] $19x+9$ [D] $\dfrac{x+81}{2x}$

18. Find the LCM of b^2, b^2-49 and $b^2-14b+49$.

    [A] $b^2(b-7)(b+7)^2$ [B] $b^2(b^2-49)(b-7)^2$

    [C] $b^2(b+7)(b-7)^2$ [D] $b^2(b-7)(b+7)$

19. Subtract: $\dfrac{b+3}{c}-\dfrac{b-1}{c}$ [A] $\dfrac{2b+4}{c}$ [B] $\dfrac{2b+2}{c}$ [C] $\dfrac{4}{c}$ [D] $\dfrac{2}{c}$

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20. Divide: $\dfrac{x+5}{x-5} \div \dfrac{x^2-25}{5-x}$ 　　[A] $\dfrac{1}{5-x}$ 　[B] $\dfrac{x+5}{x-5}$ 　[C] $\dfrac{1}{x-5}$ 　[D] $\dfrac{1}{3-x}$

Simplify:

21. $\left(\dfrac{7}{10}\right)^{-2}$ 　　[A] $\dfrac{49}{100}$ 　　[B] $-\dfrac{49}{10}$ 　　[C] $\dfrac{100}{49}$ 　　[D] $-\dfrac{100}{49}$

22. $\dfrac{-7x}{x+x^2}$ 　　[A] $-\dfrac{7}{x+1}$ 　　[B] $-\dfrac{7}{x-1}$ 　　[C] $\dfrac{7}{x-1}$ 　　[D] $\dfrac{7}{x+1}$

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23.   If r is inversely proportional to the square of s and r is $\dfrac{3}{8}$ when s is 4, find r when s is 3.

[A] $\dfrac{27}{128}$ 　　　　　[B] $\dfrac{2}{3}$ 　　　　　[C] $\dfrac{9}{32}$ 　　　　　[D] $-\dfrac{5}{8}$

Multiply:

24. $\dfrac{4b^2 + 3b - 10}{4b^2 + 25b + 25} \cdot \dfrac{20b^2 + 25b}{4 - b^2}$

25. $\dfrac{v^3}{wx} \cdot \dfrac{7w^2 x}{6v^2}$

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[1] _____

[2] _____

[3] _____

[4] _____

[5] _____

[6] _____

[7] _____

[8] _____

[9] _____

[10] _____

[11] _____

[12] _____

[13] _____

[14] _____

[15] _____

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[16] _____

[17] _____

[18] _____

[19] _____

[20] _____

[21] _____

[22] _____

[23] _____

[24] _____

[25] _____

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___

[1] [A]_____

[2] [D]_____

[3] $(2t-3)(7u-2y)$ _____

[4] [A]_____

[5] [B]_____

[6] [C]_____

[7] [B]_____

[8] [B]_____

[9] [C]_____

[10] $(5x+4y)^2$ _____

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[11] $(r+4)(r^2-4r+16)$

[12] [D]

[13] $(x-4)^2$

[14] [A]

[15] [A]

[16] [D]

[17] [A]

[18] [C]

[19] [C]

[20] [A]

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[21] [C]_____

[22] [A]_____

[23] [B]_____

[24] $\dfrac{5b(4b-5)}{(2-b)(b+5)}$

[25] $\dfrac{7vw}{6}$