MATH 095 Sample 01 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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1. Solve: $x^2 - 2x - 8 = 0$ [A] –2, 4 [B] –4, 2 [C] 2, 4 [D] –2, –4

Factor:

2. $40x^2 - 56x^4$

   [A] $8(5x^2 - 7x^4)$ [B] $8x^2(5 - 7x^2)$ [C] $x^2(40 - 56x^2)$ [D] $8x(5x - 7x^3)$

3. $x^2 - 144$

   [A] $(x + 12)(x - 12)$ [B] $(x + 12)(x + 12)$

   [C] $(x - 12)(x - 12)$ [D] $(x + 12)(x - 10)$

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4. Solve: $x^2 - 12x + 35 = 0$ [A] 5, 7 [B] –7, –5 [C] –7, 5 [D] –5, 7

Factor:

5. $x^2 - 18x + 81$ [A] $(x-9)(x+9)$ [B] $(x+9)^2$ [C] $(x-9)^2$ [D] $(x-18)^2$

6. $10py - 14y - 15px + 21x$

7. $6x^2 - 25xy + 25y^2$

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

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

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Factor:

8. $8u^3 + 27$

[A] $(2u+3)(4u^2-6u+9)$ [B] $(2u-6)(4u^2+3u+9)$

[C] $(2u+3)(4u^2+9)$ [D] $(2u+3)^3$

9. $27w^3 - 8$

10. $4kx^2 + 12kx + 9k$

[A] $k(2x+3)^2$ [B] $k(2x+3)(2x-3)$ [C] $k(2x-3)^2$ [D] $k(4x-9)(x+1)$

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11. Which of the following is a factor of $6x^2 - 23x + 20$?

[A] $(3x - 5)$ [B] $(2x - 5)$ [C] $(3x + 4)$ [D] $(2x + 5)$

12. Factor: $4x^2 + 12xy + 9y^2$

13. Maria can paint a kitchen in 6 hours and Roger can paint the same kitchen in 8 hours. How long would it take for both working together to paint the kitchen?

[A] $3\frac{3}{7}$ hr [B] 7 hr [C] 14 hr [D] $\frac{7}{24}$ hr

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14. Simplify: $\dfrac{\dfrac{x^2+4x+4}{-3x}}{\dfrac{x+2}{-x}}$ [A] $\dfrac{x+4}{3x}$ [B] $5x+2$ [C] $\dfrac{x+2}{3}$ [D] $\dfrac{x-2}{3}$

15. Divide: $\dfrac{3x^2+7x+2}{3x^2+10x+3} \div \dfrac{x^2+3x+2}{4x^2+16x+12}$

16. Simplify: $\dfrac{44x^{-4}y^3z^8}{11x^{-2}y^9z^{-2}}$ [A] $\dfrac{4y^6z^{10}}{11x^2}$ [B] $\dfrac{4z^{10}}{x^2y^6}$ [C] $\dfrac{4x^2}{11y^6z^{10}}$ [D] $\dfrac{4x^2y^6}{z^{10}}$

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17. Divide: $\dfrac{x^2+7x+12}{x^2-9} \div \dfrac{x+4}{x-4}$

[A] $\dfrac{x-4}{x-3}$ [B] $\dfrac{x+3}{x-4}$ [C] $\dfrac{7x+4}{3}$ [D] $\dfrac{x-7}{x-3}$

18. Add: $\dfrac{4}{3(x-4)} + \dfrac{8}{3(x-4)}$

[A] $\dfrac{4}{x-4}$ [B] $4(x-4)$ [C] $\dfrac{12}{x-4}$ [D] $\dfrac{1}{3(x-4)}$

19. Simplify: $\dfrac{-2x}{x+x^2}$ [A] $-\dfrac{2}{x-1}$ [B] $-\dfrac{2}{x+1}$ [C] $\dfrac{2}{x-1}$ [D] $\dfrac{2}{x+1}$

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20. The amount a spring will stretch, S, varies directly with the force (or weight), F, attached to the spring. If a spring stretches 0.7 inches with 10 pounds attached, how far will it stretch with 40 pounds attached?

[A] 28 in. [B] 2.80 in. [C] 1.75 in. [D] 0.07 in.

21. Add: $\frac{4}{y+5} + \frac{4}{y^2-25}$

22. Write as a fraction and simplify 9^{-2}.

[A] $-\frac{1}{18}$ [B] $\frac{1}{18}$ [C] $\frac{1}{81}$ [D] $-\frac{1}{81}$

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23. Add: $\frac{2}{x+5} + \frac{1}{x-5}$ [A] $\frac{3x-5}{x^2-25}$ [B] $\frac{3}{x+5}$ [C] $\frac{3}{x^2-25}$ [D] $\frac{3x-5}{3}$

24. Subtract: $\frac{m+4}{n} - \frac{m-3}{n}$ [A] $\frac{7}{n}$ [B] $\frac{2m+1}{n}$ [C] $\frac{1}{n}$ [D] $\frac{2m+7}{n}$

25. Find the least common denominator: $\frac{9x}{x^2+9x+20} + \frac{3}{x^2+4x-5}$

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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]

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[2] [B]

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[3] [A]

---

[4] [A]

---

[5] [C]

---

[6] $(5p-7)(2y-3x)$

---

[7] [B]

---

[8] [A]

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[9] $(3w-2)(9w^2+6w+4)$

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[10] [A]

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[11] [B]

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[12] $(2x+3y)^2$

---

[13] [A]

---

[14] [C]

---

[15] 4

---

[16] [B]

---

[17] [A]

---

[18] [A]

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[19] [B]

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[20] [B]

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[21] $\dfrac{4(y-4)}{(y+5)(y-5)}$

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[22] [C]

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[23] [A]

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[24] [A]

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[25] $(x+5)(x+4)(x-1)$