The answer choice "E" means None of These Answers is correct

1.) Solve for x: $x^2 - 6x + 13 = 0$

A.) 5 or 1 B.) $5i$ or i C.) $3 \pm 2i$ D.) No Solution E.) NOTA

2.) Going into the final exam, which will count as **two** tests, Brooke has test scores of 80, 83, 71, 61, and 95. What score does Brooke need on the final in order to have an average test score of 80?

A.) 80 B.) 90 C.) 95 D.) 100 E.) NOTA

3.) Find the sum of the solutions for x: $\left|x^2 + x - 1\right| = 1$

A.) -2 B.) $1/2$ C.) 1 D.) 3 E.) NOTA

4.) Solve for x *over Reals*: $\sqrt{10 + 3\sqrt{x}} = \sqrt{x}$

A.) -25 or -4 B.) -25 or 4 C.) 25 D.) 4 or 25 E.) NOTA

5.) Solve for x: $\dfrac{5}{2x-3} = \dfrac{3}{x+5}$

A.) -5 or $3/2$ B.) 0 or $7/2$ C.) 8 D.) 34 E.) NOTA

6.) Solve for x: $\left|3x - \left|2x+1\right|\right| = 4$

A.) -3 or -1 B.) -3 or 5 C.) -1 or 5 D.) $-3/5$ or 5 E.) NOTA

7.) What is (are) the nature of the roots for the equation $3x^2 + 5x - 8 = 0$?

A.) None B.) One Repeated C.) Two Imaginary D.) Two Unequal Real E.) NOTA

8.) For $0 < a < b$, which choice shows the relationship between the geometric mean and the arithmetic mean of two numbers?

A.) $\sqrt{ab} < \dfrac{a+b}{2}$ B.) $\sqrt{ab} \le \dfrac{a+b}{2}$ C.) $\sqrt{ab} > \dfrac{a+b}{2}$ D.) $\sqrt{ab} \ge \dfrac{a+b}{2}$ E.) NOTA

9.) Solve for x: $0 < \dfrac{3x+2}{2} < 4$

A.) $-2/3 > x > 2$ B.) $x < 2$ C.) $-2/3 < x < 2$ D.) $x > -2/3$ E.) NOTA

10.) Solve for x: $0 < (2x-4)^{-1} < \dfrac{1}{2}$

A.) $x < 0$ B.) $x > 3$ C.) $0 < x < 3$ D.) $0 > x > 3$ E.) NOTA

11.) Solve for x: $\dfrac{5}{x+3} + 3 = \dfrac{8+x}{x+3}$

A.) -3 B.) $\varnothing$ C.) 3 D.) 8 E.) NOTA

12.) Find k such that the equation $x^2 - kx + 4 = 0$ has a repeated real solution.

A.) -4 B.) 4 C.) 5 D.) 4 or -4 E.) NOTA

13.) Solve for x such that $a \neq 0$; $b \neq 0$; and $a + b \neq 0$: $\frac{x}{a} + \frac{x}{b} = c$

A.) abc B.) $\frac{abc}{2}$ C.) $\sqrt{abc}$ D.) $\pm\sqrt{abc}$ E.) NOTA

14.) Solve for x: $\left(e^4\right)^x \cdot e^{x^2} = e^{12}$

A.) -6 or 2 B.) $\sqrt[3]{3}$ C.) $\sqrt{3}$ D.) $\sqrt{3}$ or $-\sqrt{3}$ E.) NOTA

15.) How many distinct ordered real pairs (x, y) are solutions for the system: $\log_a(x+y) + \log_a(x-y) = 0$,

$x^2 + y^2 = 1$ for $a > 1$?

A.) 0 B.) 1 C.) 2 D.) 4 E.) NOTA

16.) Solve for y: $\frac{2}{y+3} + \frac{3}{y-4} = \frac{5}{y+6}$

A.) $-\frac{11}{6}$ B.) 2 C.) 11 D.) 30 E.) NOTA

17.) Solve for x: $(3x+4)^2 - 6(3x+4) + 9 = 0$

A.) -3 B.) $-1/3$ C.) 0 D.) 9 E.) NOTA

18.) Solve over Reals for x : $|x| > -0.5$

A.) $x < 0.5$ B.) $x > 0.5$ C.) $x < -0.5$ or $x > -0.5$ D.) No Solution E.) NOTA

19.) Find the largest integral value of p for which the equation $x^2 + p = 11x$ has two distinct real solutions.

A.) 5 B.) 6 C.) 30 D.) 31 E.) NOTA

20.) Solve over reals for x: $e^{2x+5} = 8$

A.) $\ln\left(3/5\right)$ B.) $\frac{\ln 8 - 5}{2}$ C.) $\frac{\ln 3}{2}$ D.) $3/2$ E.) NOTA

21.) Solve for x: $|3|x = 9$

A.) -3 B.) -3 or 3 C.) 3 D.) No Solution E.) NOTA

22.) Solve for x: $(x-1)(x+1) > (x-3)(x+4)$

A.) $-12 < x < -1$ B.) $-4 < x < 3$ C.) $-1 < x < 1$ D.) $x < 11$ E.) NOTA

23.) Judy and Tom agree to share the cost of an \$18 pizza based on how much each ate. If Tom ate $2/3$ the amount that Judy ate, how much should each pay?

A.) \$4.50 and \$13.50 B.) \$6.00 and \$12.00 C.) \$7.20 and \$10.80 D.) \$9.00 and \$9.00 E.) NOTA

24.) If r and s are the roots of the equation $3x^2 - 7x + 1 = 0$, find the value of $r^3s + rs^3$.

A.) $\frac{7}{27}$ B.) $\frac{1}{3}$ C.) $\frac{7}{3}$ D.) $\frac{43}{27}$ E.) NOTA

25.) Solve for x: $\log_2(2x+1) = 3$

A.) $1/2$ B.) 2 C.) $5/2$ D.) 4 E.) NOTA

26.) Solve for x: $3x^{4/3} + 5x^{2/3} - 2 = 0$, such that $x \in \{\textit{Positive Real Numbers}\}$.

A.) 2 or $\sqrt{3}$ B.) 2 or $3\sqrt{3}$ C.) $2\sqrt{2}$ or $\frac{\sqrt{3}}{9}$ D.) $\frac{\sqrt{3}}{9}$ E.) NOTA

27.) Trent can deliver his newspapers in 30 minutes. It takes Lois 20 minutes to do the same route. How long would it take them to deliver the newspaper if they work together?

A.) 10 minutes B.) 12 minutes C.) 15 minutes D.) 20 minutes E.) NOTA

28.) Solve for z: $z(z^2+1) = 3 + z^3$

A.) $-3/2$ B.) $-1/3$ C.) $1/3$ D.) 1 E.) NOTA

29.) What is the sum of the roots of $\frac{1}{2}x^2 = \sqrt{2}x + 1$

A.) $-2\sqrt{2}$ B.) $-\frac{\sqrt{2}}{2}$ C.) $\frac{\sqrt{2}}{2}$ D.) $2\sqrt{2}$ E.) NOTA

30.) Solve for x: $4 - \frac{1}{x} - \frac{2}{x^2} = 0$

A.) -4 or 4 B.) $-1/2$ or 1 C.) $-1/4$ or $1/2$ D.) $\frac{1 \pm \sqrt{33}}{8}$ E.) NOTA