Algebra I Team Solutions (4) February 20, 1993

① $x + \frac{4}{5}x = 2\frac{1}{3}$

$\frac{9}{5}x = \frac{7}{3}$

$x = \frac{7}{3} \cdot \frac{5}{9} = \frac{35}{27}$

$\frac{35}{27} \cdot \left(\frac{4}{5} \cdot \frac{35}{27}\right) = \frac{980}{729}$ or $/\ \frac{251}{729}$ Ans.

② Statement 8 is false. Is not true for all sets. Ex. $A = \{1, 2\}$

$B = \{2, 3\}$

$A \cap B = \{2\}$

$A \notin \{A \cap B\}$

③ $-2(5x - 3y = 4) \Rightarrow -10x + 6y = -8$

$+\ 9x - 6y = 8$

$-x = 0$

$x = 0$

$5(0) - 3y = 4 \Rightarrow -3y = 4 \Rightarrow y = \frac{-4}{3}$

$4\left(\frac{5}{4}a + 2b = 5\right) \Rightarrow 5a + 8b = 20$

$15\left(\frac{1}{3}a - \frac{4}{5}b = -2\right) \Rightarrow 5a - 12b = -30$

$20b = 50$

$b = \frac{5}{2}$

$\frac{5}{4}a + 2\left(\frac{5}{2}\right) = 5 \Rightarrow \frac{5}{4}a + 5 = 5$

$\Rightarrow \frac{5}{4}a = 0$

$a = 0$

$10(0) - 5(0) + 6\left(-\frac{4}{3}\right) - 2\left(\frac{5}{2}\right)$

$-8 - 5 = -13$ Ans.

④ A: $-2(-1)^3 = -2 \cdot -1 = 2$

B: $(-8)^2 - 5(-8) - 6 = 64 + 40 - 6 = 98$

C: $\frac{-10 - 4^2}{-2(-1)^2} = \frac{-10 - 16}{-2(1)} = \frac{-26}{-2} = 13$

D: $(-4 + 3)(-4 - 1) = (-1)(-5) = 5$

$\therefore$ $AB - CD$

$2(98) - 13(5)$

$196 - 65 = 131$ Ans.

⑤ $x - 5 \overline{)\ x^2 - 5x + 3}$ $\quad x + \frac{3}{x-5}$

$x^2 - 5x$

3

$\therefore$ $\frac{3}{x-5}$ must be an integer value. This will happen when $x = 2, 4, 6, 8$ Ans.

When $x = 2$, $\frac{3}{2-5} = \frac{3}{-3} = -1$

$x = 4$, $\frac{3}{4-5} = \frac{3}{-1} = -3$

$x = 6$, $\frac{3}{6-5} = \frac{3}{1} = 3$

$x = 8$, $\frac{3}{8-5} = \frac{3}{3} = 1$

⑥ Factor $3056^2 - 2944^2$

$(3056 + 2944)(3056 - 2944)$

$6000 \cdot 112$

$672{,}000$ Ans.

⑦ M: $2y = -4x + 10$

$y = -2x + 5$ $\quad m = -2$ $\quad \perp$ line $m = \frac{1}{2}$

A: Let $y = 0$. $\frac{1}{3}x - \frac{1}{2}(0) = 4$

$\frac{1}{3}x = 4$

$x = 12$

T: $3x + 2(3) = 24$ ordinate is the y-value

$3x + 6 = 24$

$3x = 18$

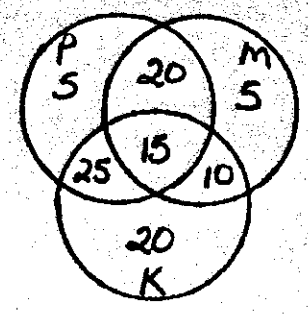
$x = 6$ abscissa is the x-value

H: Found in Quadrant 4

$\therefore$ $\frac{A}{m} - \frac{H}{T} = \frac{12}{\frac{1}{2}} - \frac{4}{6} = 24 - \frac{2}{3} = 23\frac{1}{3}$

Ans.

⑧



$\frac{95}{100} = 95\%$

Ans.

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⑨
- root
- factor
- cubic
- transitive
- division
- commutative
- infinite
- quotient
- algebra

Ans: quadratic

⑩ $x+(x+2)+(x+4)<24$

$3x+6<24$

$3x<18$

$x<6$

$\{1,3,5\}$ $\{3,5,7\}$ $\{5,7,9\}$ Ans.

⑪ $(3x+A)(2x-1)=6x^2+Bx-4$

$6x^2-3x+2Ax-A=6x^2+Bx-4$

$6x^2+(2A-3)x-A=6x^2+Bx-4$

$\therefore -A=-4 \Rightarrow A=4$

$2A-3=B$

$2(4)-3=B$

$8-3=B$

$5=B$

$(4+5)^3=9^3=729$ Ans.

⑫ #1 $\frac{20(80)+5(x)}{25}=82$

$1600+5x=2050$

$5x=450$

$x=90$

#2 $.15x-40=.07x$

$.08x=40$

$8x=4000$

$x=500$

$500+90=590$ Ans.

⑬ $\begin{cases} J+K=60 \\ J-10=3(K-10) \end{cases}$ $\Rightarrow 60-K=J$

$60-K-10=3K-30$

$50-K=3K-30$

$80=4K$

$20=K$

Ans.

$20+7=27$ Kate

$40+7=47$ Jeff

⑭ $6Y^2+Y-15-5Y^2-34Y+7+Y^2+8Y+16-Y^2+6Y-9$

$Y^2-19Y-1$ Ans.

⑮ $M=(1+\sqrt{3})^2-2(1+\sqrt{3})-2$

$=1+2\sqrt{3}+3-2-2\sqrt{3}-2$

$=0$

$\therefore MTV=0$ Ans.