ALGEBRA I INDIVIDUAL SOLUTIONS MARCH 96

INDIVIDUAL SOLUTIONS

(1) $36 \div [(-2+1)(9)] = 36 \div (-9) = \boxed{-4}$ (A)

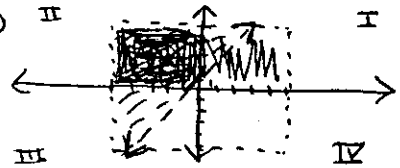
(2) $3x-2 = x-6$, $2x = -4$, $x = -2$, $(-2)^2 = \boxed{4}$ (E)

(3)

	r	t	d
1	x	2	2x
2	x+3	2	2x+6

$d_1 + d_2 = 34$
$4x + 6 = 34$
$x = 7$, $(x+3) = 10$
$\boxed{17}$ (D)

(4) $2x = 14$, $x = 7$; $2x = -14$, $x = -7$; $(7 + (-7)) = \boxed{0}$ (C)

(5) 

OVERLAP MORE IN QUADRANT $\boxed{\text{II}}$ (B)

(6) $\frac{-b}{a}$, $x^2 - 6x + 18 = 0$, $\frac{6}{1} = \boxed{6}$ (B)

(7) $882 = 2 \cdot 7^2 \cdot 3^2$; $1225 = 5^2 \cdot 7^2$
$\text{Lcm} = 2 \cdot 7^2 \cdot 3^2 \cdot 5^2 = 22050$
$\text{Sum} = \boxed{9}$ (A)

(8) Long Division or Synthetic Division $12\left(\frac{-1}{3}\right)^2 + 16\left(\frac{-1}{3}\right) + 6 = \boxed{2}$ (B)

(9) Degree of Largest Monomial Degree $(-4xy^8z) = \boxed{10}$ (B)

(10) $\dfrac{\left(\frac{1}{3} + \frac{2}{5} + \frac{x}{2}\right)30}{\left(\frac{x}{5} + \frac{2}{3}\right)30} = \dfrac{10 + 12 + 15x}{6x + 20} = \boxed{\dfrac{15x+22}{6x+20}}$ (C)

(11) $\frac{6}{x-5} = \frac{x-25}{x(x-5)}$, $6x = x - 25$, $5x = -25$, $x = \boxed{-5}$

(12) $\frac{x}{8} + \frac{x}{6} = 1$, $6x + 8x = 48$, $x = \frac{48}{14}$ or $\boxed{\frac{24}{7}}$ (E)

(13) $\dfrac{(1+\sqrt{5})(3+\sqrt{5})}{(3-\sqrt{5})(3+\sqrt{5})} = \dfrac{8+4\sqrt{5}}{4} = \boxed{2+\sqrt{5}}$ (A)

(14) $\sqrt{-9}\sqrt{-4} = 3i\,2i = 6i^2 = \boxed{-6}$ (B)

(15) $5x - 14 = 3y$ $\quad -10x + 28 = -6y$
$-10x + 8 = -6y$ $\quad -10x + 8 = -6y$

BECAUSE OF 28 AND 8, THESE 2 LINES WOULD HAVE T SAME SLOPES BUT DIFFERENT Y INTERCEPTS. ∴ THEREFORE THERE ARE NO SOLUTIONS OR INCONSISTENT $\boxed{\text{II ONLY}}$ (I

(16) EQUATION 1 CAN BE REWRITTEN AS
$x + y + z = \boxed{7}$, THIS IS THE SUM (C)

(17) ACCORDING TO THE GRAPH THERE WOULD BE ONE INEQUALITY WITH A NEGATIVE SLOPE AND A GREATER THAN SHADING, LIKEWISE THERE WOULD BE ONE INEQUALITY WITH A POSITIVE SLOPE WITH A LESS THAN SHADING. THEREFORE THE ONLY POSSIBLE CHOICE WOULD BE (D) $\boxed{\begin{cases} y \le 2x - 1 \\ x + y \ge 3 \end{cases}}$

ALGEBRA 1

INDIVIDUAL SOLUTIONS

(18) $\$4\times400=\$1600$, $\$5\times350=\$1750$
$\$6\times300=\$1800$; $\$7\times250=\$1750$, $\therefore$ $\boxed{6}$ (E)

(19) $x^3+2x-3x^2=x(x^2-3x+2)=\boxed{x(x-1)(x-2)}$ (D)

(20) MULTIPLY BY LCD, $2x+8+4x=x^2+4x \Rightarrow$
$0=x^2-2x-8$, $0=(x-4)(x+2)$, $x=4,-2$
BOTH WORK $\therefore$ THE SUM IS $4+(-2)=\boxed{2}$ (B)

(21) $\left(\sqrt{4-x}\right)^2=\left(4-\sqrt{x+6}\right)^2 \Rightarrow 4-x=16-8\sqrt{x+6}+x+6 \Rightarrow$
$8\sqrt{x+6}=2x+18 \Rightarrow \left(4\sqrt{x+6}\right)^2=(x+9)^2 \Rightarrow 16(x+6)=$
$x^2+18x+81 \Rightarrow 0=x^2+2x-15 \Rightarrow 0=(x+5)(x-3)$
$x=-5,3$ $\therefore$ SUM $-5+3=\boxed{-2}$ (A)

(22) $\dfrac{x+2}{x^2+4x+3}=\dfrac{1}{2x+1} \Rightarrow 2x^2+5x+2=x^2+4x+3 \Rightarrow$
$x^2+x-1=0$, $x=\dfrac{-1\pm\sqrt{1+4}}{2}$ ONLY POSITIVE
SOLUTION WOULD $\boxed{\dfrac{-1+\sqrt{5}}{2}}$ (E)

(23) $\binom{8}{5}(2x)^3(-3y)^5 \Rightarrow 56(8)(-243)=\boxed{-108864}$ (A)

(24) $L=4x$, NEW $W=3x$; ENLARGED $W=3x+10$, $L=4x+20$
CONTINUED

(24) CONTINUED! $2(4x)(3x)=(4x+20)(3x+10) \Rightarrow$
$2(x)(3x)=(x+5)(3x+10) \Rightarrow 6x^2=3x^2+25x+50$
$3x^2-25x-50=0 \Rightarrow (3x+5)(x-10)=0$,
$x=-\frac{5}{3}, 10$ $A=12x^2 \Rightarrow A=12\cdot10^2=\boxed{1200}$ (B)

(25) $\left(x^{\sqrt{3}}\right)^{\sqrt{27}}=x^{\sqrt{81}}=\boxed{x^9}$ (C)

(26) $A^2=5^2+12^2$, $A^2=169$, $A=\boxed{13}$ (A)

(27) $\dfrac{-A}{B}=\dfrac{-3}{-4}=\dfrac{3}{4}$, $\perp$ IS NEGATIVE RECIPROCAL $\boxed{\dfrac{-4}{3}}$ (B)

(28) 8 MONOMIALS EACH WITH A DEGREE OF 7, $8\cdot7=\boxed{56}$ (D)

(29) OPTION 1
$y=5-2x$, $y=x-4$ $\Rightarrow$ $5-2x=x-4$, $9=3x$, $3=x$, $y=-1$
$y=5-2x$, $y=5$ $\Rightarrow$ $5=5-2x$, $0=-2x$, $0=x$, $y=5$
$y=x-4$, $y=5$ $\Rightarrow$ $5=x-4$, $9=x$, $y=5$

OPTION 2 / DETERMINANT MATRIX FORM — USE DISTANCE FORMULA, STORE VARIABLES IN MEMORY AND USE HERONS FORMULA
POINTS OF INTERSECTION $\frac{1}{2}\begin{vmatrix}3&-1&1\\0&5&1\\9&5&1\end{vmatrix}$, $\pm\frac{1}{2}\begin{vmatrix}3&-1&1\\0&5&1\\9&5&1\end{vmatrix}\begin{matrix}3&-1\\0&5\\9&5\end{matrix}=\boxed{27}$ (C)

(30) $x=2y$
$2y-9-y=-z$, $2y+8=2z+3y$ $\Rightarrow$ $y+z=9$, $-y-2z=-8$ $\Rightarrow$ $-z=1$
ADDITION METHOD
$\therefore$ $z=\boxed{-1}$ (B)