

## INDIVIDUAL

$$\textcircled{1} \quad K(-2) = -3(-2)^2 - 7(-2) + 1$$

$$C \quad = -3(4) + 14 + 1$$

$$\boxed{K(-2) = 3}$$

$$\textcircled{2} \quad 3(5-2x) + 4x > 5(x+3) + -7$$

$$15 - 6x + 4x > 5x + 15 + -7$$

$$D \quad -2x + 15 > 5x + 8$$

$$-7x > -7$$

$$\boxed{x < 1}$$

$$\textcircled{3} \quad 6x^2 - 37x - 60$$

$$D \quad (2x-15)(3x+4)$$

$$\textcircled{4} \quad 12x^2 - 11x - 56 = 0$$

$$C \quad (4x+7)(3x-8) = 0$$

$$\boxed{x = -\frac{7}{4}} \quad x = \frac{8}{3}$$

$$\textcircled{5} \quad x = 1^{\text{st}} \text{ even int. } 48$$

$$x+2 = 2^{\text{nd}} \text{ even int. } 50$$

$$x+4 = 3^{\text{rd}} \text{ even int. } 52$$

$$E \quad x+6 = 4^{\text{th}} \text{ even int. } \boxed{54}$$

$$(x+6)^2 - (x+2)^2 = 416$$

$$x^2 + 12x + 36 - x^2 - 4x - 4 = 416$$

$$8x + 32 = 416$$

$$8x = 384$$

$$x = 48$$

$$\textcircled{6} \quad R = \sqrt{(-3+5)^2 + (5+10)^2}$$

$$= \sqrt{289} = 17$$

$$C \quad (x+3)^2 + (y-5)^2 = 289$$

$$x^2 + 6x + 9 + y^2 - 10y + 25 = 289$$

$$\boxed{x^2 + y^2 + 6x - 10y = 255}$$

$$\textcircled{7} \quad 3x^3 - 5x^2 - 9x - 24 = 0$$

$$C \quad x^3 - \frac{5}{3}x^2 - 3x - 8 = 0$$

$$\boxed{\text{PRODUCT} = 8}$$

$$\textcircled{8} \quad \frac{6+3\sqrt{2}}{\sqrt{5}-\sqrt{2}} \cdot \frac{\sqrt{5}+\sqrt{2}}{\sqrt{5}+\sqrt{2}}$$

$$E \quad \frac{6\sqrt{5}+6\sqrt{2}+3\sqrt{10}+6}{5-2}$$

$$\frac{2\sqrt{5}+2\sqrt{2}+\sqrt{10}+2}{1}$$

$$-2\sqrt{5}\left(1+\frac{\sqrt{2}}{2}\right) = -2\sqrt{5} - \sqrt{10}$$

$$\frac{2\sqrt{5}+2\sqrt{2}+\sqrt{10}+2 - 2\sqrt{5}-\sqrt{10}}{1}$$

$$\boxed{2\sqrt{2}+2}$$

$$\textcircled{9} \quad 3x-8 < 5(4-x) \leq 3(x+5)$$

$$3x-8 < 20-5x \leq 3x+15$$

$$B \quad -8 < 20-8x \leq 15$$

$$-28 < -8x \leq -5$$

$$\frac{28}{8} > x \geq \frac{5}{8}$$

$$\frac{7}{2} > x \geq \frac{5}{8}$$

$$\textcircled{10} \quad \text{Log}_7(6x-13) + \text{Log}_7(x+1) = 1$$

$$\text{Log}_7(6x^2-7x-13) = 1$$

$$D \quad 6x^2-7x-13 = 7$$

$$6x^2-7x-20 = 0$$

$$(3x+4)(2x-5) = 0$$

$$x = -\frac{4}{3} \quad \boxed{x = \frac{5}{2}}$$

$$\textcircled{11} \quad \frac{-81 - (-2)(-1)^{43}(-38)(-1)^{78}}{(-3)(1)(-2)^5}$$

$$B \quad \frac{-81 + 76}{-3(-32)} = \boxed{\frac{-5}{96}}$$

(SHORT WAY)

$$\textcircled{12} \quad \begin{matrix} 3x + 8y = 17 \\ 2x - 3y = 8 \end{matrix}$$

$$B \quad \begin{matrix} 5x + 5y = 25 \\ x + y = 5 \end{matrix}$$

$$\textcircled{13} \quad 3x - 5y = 11$$

$$A \quad y = \frac{3}{5}x - \frac{11}{5}$$

$$m_1 = -\frac{5}{3}$$

$$y - 2 = -\frac{5}{3}(x + 3)$$

$$y + 2 = -\frac{5}{3}x - 5$$

$$y = -\frac{5}{3}x - 3$$

$$\boxed{5x + 3y = -9}$$

$$\textcircled{14} \quad 3x^2 + 8x + 2 < 0$$

$$C \quad x = \frac{-8 \pm \sqrt{64-24}}{6}$$

$$x = \frac{-4 \pm \sqrt{10}}{3}$$

$$\begin{matrix} (-)(+) = + & (-)(+) = 0 & (+)(+) = + \\ \leftarrow \frac{-4-\sqrt{10}}{3} & \frac{-4+\sqrt{10}}{3} & \rightarrow \end{matrix}$$

$$\frac{-4-\sqrt{10}}{3} < x < \frac{-4+\sqrt{10}}{3}$$

$$-2.387... < x < -0.2782...$$

$$\boxed{-2, -1}$$

$$\textcircled{15} \quad a_3 \text{ geom. mean}$$

$$D \quad a_3 = \sqrt{6 \cdot 24} = 12$$

$$\textcircled{16} \quad 9(x-3)^2 + 25(y-4)^2 = 225$$

$$\frac{(x-3)^2}{25} + \frac{(y-4)^2}{9} = 1$$

$$B \quad C(3,4) \quad b=3$$

vertices of m.a.  $(3,7)$  and  $(3,1)$ 

$$\textcircled{17} \quad \text{Log}_4 32 - \text{Log}_9 3$$

$$B \quad \frac{5}{2} - \frac{1}{2} = \boxed{2}$$

(18)  $(-8)^2 - 4(2)(k) < 0$

C  $64 - 8k < 0$   
 $-8k < -64$

$k > 8$

(19)  $27^{2x-1} = 9^{3x+2}$

$3^{6x-3} = 3^{6x+4}$

D  $6x-3 = 6x+4$

$-3 = 4$

$\emptyset$

(20) V to F 5 up

$y-2 = \frac{1}{20}(x+3)^2$

B  $y = \frac{1}{20}(x+3)^2 + 2$

(21)  $\begin{vmatrix} x & 2 & 0 \\ 0 & x & 1 \\ 1 & 3 & 2 \end{vmatrix} = 7$

$x \begin{vmatrix} x & 1 \\ 3 & 2 \end{vmatrix} - 2 \begin{vmatrix} 0 & 1 \\ 1 & 2 \end{vmatrix} + 0 = 7$

A  $x(2x-3) - 2(0-1) = 7$

$2x^2 - 3x + 2 = 7$

$2x^2 - 3x - 5 = 0$

$(2x-5)(x+1) = 0$

$x = \frac{5}{2}$   $x = -1$

(22)  $a_{41} = -35 + 40(9)$

C  $a_{41} = 325$

(23)  $\frac{7!}{4!3!} (2x)^4 (-y^2)^3$

B  $\frac{7 \cdot 6 \cdot 5 \cdot 4!}{4!3 \cdot 2!} 16x^4 (-y^6)$

$-560x^4y^6$

(24)  $x = \text{width} = 6$

$x+15 = \text{length} = 21$

$2x + 2(x+15) = 54$

$4x + 30 = 54$

D  $x = 6$

Area = LW =  $6(21) = 126$

(25)  $4 = 32R^6$

C  $R^6 = \frac{1}{8}$   
 $R = \sqrt[6]{\frac{1}{8}} = \sqrt[3]{\frac{1}{2}} = \frac{\sqrt{2}}{2}$

(26)  $-3 \begin{vmatrix} 2 & 4 \\ 5 & 0 \end{vmatrix} - 8 \begin{vmatrix} 6 & 4 \\ 1 & 0 \end{vmatrix} + 7 \begin{vmatrix} 6 & 2 \\ 1 & 5 \end{vmatrix}$

D  $-3(-20) - 8(-4) + 7(28)$

$288$

(27)  $+3(8) + 4(2) + 6(-3) + -3(-4)$

A  $b_{33} = -22$

(MULT. 3rd ROW ON LEFT by 3rd COLUMN ON RIGHT)

(28)  $A = 5+7+9+\dots+37$

$B = 5+7+9+\dots+37$

So  $A-B = 0$

(29)  $a = 4$   $b = -2$

A So  $ab = -8$

(30)  $\det A = -27 + 28 = 1$

$A^{-1} = \frac{1}{1} \begin{bmatrix} 9 & 4 \\ -7 & -3 \end{bmatrix} \det A^{-1} = 1$

A  $\det a_{11} + a_{22}$   
 $1 + 4 = 5$

TEAM

(1)  $A = -3(-i) + -12(-1) = 3i + 12$

$B = 9 - 3i - 2i^2 = 11 - 3i$

$A+B = 23$

(2) x-intercept is 8  $\rightarrow (8,0)$   
midpt.  $(1,4)$

$D = \sqrt{(8-1)^2 + (0-4)^2} = \sqrt{65}$

(3)  $a = 81 - 75 = 6$

$b = 3$   $c = -12$

$6x^2 + 3x + 12 = 0$

$x = \frac{-3 \pm \sqrt{9 - 288}}{12}$

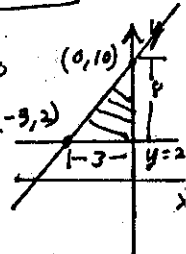
$= \frac{-3 \pm i\sqrt{279}}{12}$

No real roots  $a \emptyset$

(4)  $y-2 = 8x-6=30$   $(0,10)$   
 $x=-3$   $(-3,2)$

$A = \frac{1}{2}(3)(8)$

Area = 12



(5)  $3x+y=8 \rightarrow y = -3x+8$   
sub in QUADRATIC

$-3x+8 = x^2 - 4x - 12$

$x^2 - x - 20 = 0$

$(x-5)(x+4) = 0$

$x=5$   $x=-4$   
not in Q II in Q II

$3(-4)+y=8$

$y=20$

point in Q II is  $(-4, 20)$