

SCORE: ____ / 20 POINTS

What day of the month is your birthday ?

What are the last 2 digits of your address ?

What are the last 2 digits of your zip code ?

What are the last 2 digits of your social security number ?

[IF YOU DO NOT HAVE A SOCIAL SECURITY NUMBER,

USE YOUR STUDENT ID NUMBER]

NO MATRIX CAPABLE CALCULATORS ALLOWED

Find
$$\begin{vmatrix} 4^+ & 1 & -2 & 3 \\ -1^- & -3 & 5 & 2 \\ 0^+ & 2^- & 0 & 0 \\ 0 & 7 & 0 & -2 \end{vmatrix}$$

$$= -2 \begin{vmatrix} 4^+ & -2 & 3 \\ -1^- & 5 & 2 \\ 0^+ & 0^- & -2^+ \end{vmatrix}$$

$$= (-2)(-2) \begin{vmatrix} 4 & -2 \\ -1 & 5 \end{vmatrix}$$

$$= (-2)(-2)(20-2)$$

$$= 72$$

SCORE: ____ / 3 POINTS

 $\frac{1}{2}$ POINT EACH

Solve for x : $\begin{vmatrix} x-3 & x \\ 2 & x-2 \end{vmatrix} = 0$.

SCORE: ____ / 2 POINTS

$$(x-3)(x-2) - 2x = 0$$

$$x^2 - 5x + 6 - 2x = 0$$

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

$$(x-1)(x-6) = 0$$

$$x = 1, 6$$

 $\frac{1}{2}$ POINT EACH

Find the partial fraction decomposition of $\frac{x^3}{(x-1)^2}$.

SCORE: ___ / 6 POINTS

$$\begin{array}{r} x^3 \\ x^2-2x+1 \overline{) x^3} \\ \underline{x^3-2x^2+x} \\ 2x^2-x \\ \underline{2x^2-4x+2} \\ 3x-2 \end{array}$$

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

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

$$\frac{3x-2}{(x-1)^2} = \frac{A}{x-1} + \frac{B}{(x-1)^2}$$

$$3x-2 = A(x-1) + B$$

$$x=1: 1 = B \cdot \frac{1}{2}$$

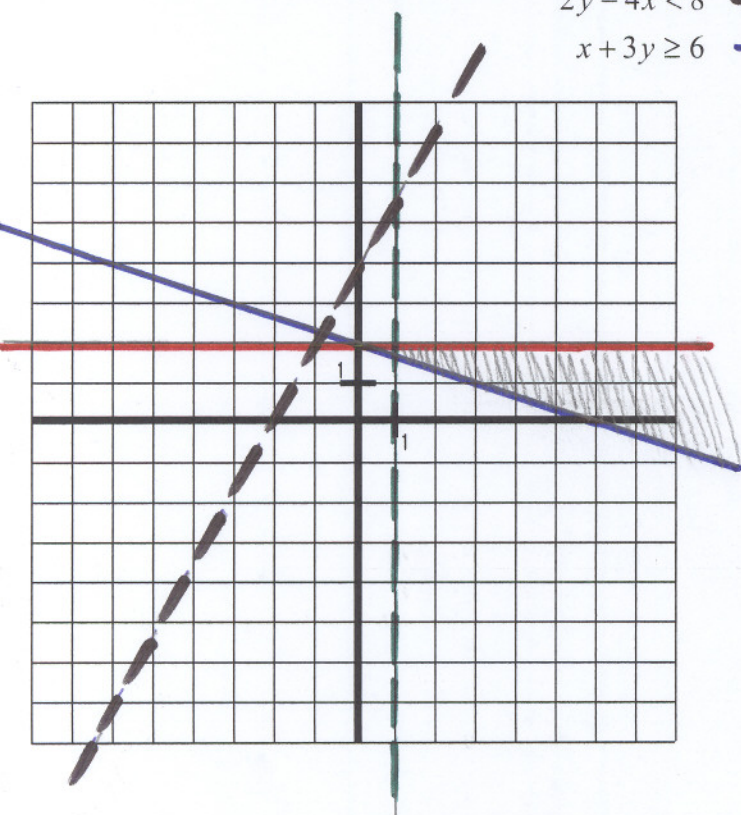
$$\text{COEF OF } x: 3 = A \cdot \frac{1}{2}$$

$$\begin{aligned} \text{CHECK } x=0: -2 &= 3(-1) + 1 \\ &= -3 + 1 \\ &= -2 \quad \checkmark \end{aligned}$$

Graph the solution of the system of inequalities

$$\begin{aligned} x &> 1 && \text{--- green ---} \\ y &\leq 2 && \text{--- red ---} \\ 2y - 4x &< 8 && \text{--- black dashed ---} \\ x + 3y &\geq 6 && \text{--- blue solid ---} \end{aligned}$$

SCORE: ___ / 6 POINTS



1 POINT FOR EACH LINE
DRAWN CORRECTLY
(INCLUDING WHETHER IT IS
DOTTED OR SOLID)
2 POINTS FOR CORRECT
SHADED REGION