(c)

$$A=\begin{pmatrix} 3/2 & -1/2 \\ -5 & 1 \end{pmatrix} \qquad b=\begin{pmatrix} 0 \\ 5 \end{pmatrix} \qquad g(z)=A^{-2}z-A^{-2}b=Bz+c$$

$$B=A^{-2}=-2\begin{pmatrix} 1 & 1/2 \\ 5 & 3/2 \end{pmatrix}=\begin{pmatrix} -2 & -1 \\ -8 & -3 \end{pmatrix} \qquad c=-A^{-2}b=\begin{pmatrix} 5 \\ 15 \end{pmatrix}$$

$$y=2x-1 \rightsquigarrow (5,25-1)=\underset{P_0}{(0,-1)}+5\underset{v}{(1,2)}$$

$$\begin{cases} v \rightsquigarrow v'=Bv=(-5,-15)\equiv(\underset{a}{2},\underset{b}{7}) \\ P_0=(0,-1) \rightsquigarrow BP_0+c=(1,3)+(5,15)=(\underset{x_0}{6},\underset{y_0}{18}) \end{cases}$$

$$y-y_0=(x-x_0)\frac{b}{a}$$

$$y-18=(x-6)\frac{7}{2} \qquad y=\frac{7}{2}x-21+18 \qquad y=\frac{7}{2}x-3$$