Problem #7

\[ \int \int (3x-2y) \, dA \]

\[ x = u + 2v \]
\[ y = 3u - 2v \]

\[ y = 3x = 0 \]
\[ y - 3x = -8 \]

\[ 3u - 2v = 3(u + 2v) \]
\[ 3u - 2v = 3u - 6v \]
\[ y - 3x = -8 = 0 \Rightarrow v = 0 \]
\[ y - 3x = -8 = 0 \Rightarrow v = 1 \]

\[ \int \int [3(u+2v) - 2(3u-2v)] \, 8 \, du \, dv \]
\[ = 8 \int \int [-3u + 10v] \, du \, dv \]
\[ = 8 \left( \int_{0}^{1} \left( \int_{0}^{1} [-3u + 10v] \, du \right) \, dv \right) \]
\[ = 8 \left( \int_{0}^{1} \left( -\frac{3}{2}u + 10v \right) \, du \right) \]
\[ = 8 \left( \left[ -\frac{3}{2}u^2 + 10uv \right]_{0}^{1} \right) \]
\[ = 8 \left( -\frac{3}{2} + 10 \right) = 28 \]