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| --- | --- |
| **Fill in the Blanks** | **Inverse of a Linear Transformation** |

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| --- | --- | --- | --- | --- | --- |
| **Transformation****Matrix** $M$ | **Det** $M$ | **Inverse Matrix** $M^{-1}$ | **Image Coords** | **Matrix Calculation** | **Object Coords** |
| $$\left(\begin{matrix}2&1\\-1&3\end{matrix}\right)$$ | $$7$$ | $$\frac{1}{7}\left(\begin{matrix}3&-1\\1&2\end{matrix}\right)$$ | $$(8, 3)$$ | $$\frac{1}{7}\left(\begin{matrix}3&-1\\1&2\end{matrix}\right)\left(\begin{matrix}8\\3\end{matrix}\right)=\left(\begin{matrix} 3 \\ 2 \end{matrix}\right)$$ |  |
| $$\left(\begin{matrix}-1&0\\4&2\end{matrix}\right)$$ | $$-2$$ | $$-\frac{1}{2}\left(\begin{matrix}2&0\\-4&-1\end{matrix}\right)$$ | $$(-2, -2)$$ |  |  |
| $$\left(\begin{matrix}1&-3\\0&-1\end{matrix}\right)$$ |  |  | $$(-5, -3)$$ |  |  |
| $$\left(\begin{matrix}-3&0\\0&2\end{matrix}\right)$$ |  |  | $$(3, 14)$$ |  |  |
| $$\left(\begin{matrix}3&-2\\-1&4\end{matrix}\right)$$ |  |  | $$(15, -5)$$ |  |  |
| $$\left(\begin{matrix}-5&0\\1&-1\end{matrix}\right)$$ |  |  | $(-10, 5)$  |  |  |
| $$\left(\begin{matrix}1&0&-1\\2&1&0\\-1&3&1\end{matrix}\right)$$ |  |  | $$(2, 6, -2)$$ |  |  |
| $$\left(\begin{matrix}0&2&-1\\-2&3&1\\1&-1&0\end{matrix}\right)$$ |  |  | $$(6, 16, -5)$$ |  |  |