Define the image of an arrow $f$ in an Abelian category.
Answer:
The image of $f$ is the kernel of the cokernel of $f$. 

Question:

What is the dual construction?
The coimage. It is defined to be the cokernel of the kernel of $f$. 
Last Time:

We proved that in $\mathbf{AbG}$, the finite product of objects is isomorphic to the finite coproduct. That is, a construction and its dual are essentially the same. In general, this is rare. But not in $\mathbf{AbG}$.
This Time:

We prove that two other dual constructions are isomorphic in $\text{AbG}$:
Theorem

In $\text{Ab}_G$, the image and coimage of an arrow are isomorphic.
We will prove, instead, something more:

Every arrow $f : A \to B$ in $\mathsf{AbG}$ can be uniquely factored as the composition of a strong epic arrow $p$ followed by a monic arrow $i$.
Where $i$ is the image and $p$ the coimage.
Proof

Let

\[ \begin{array}{ccc}
K & \xrightarrow{k} & A \\
\downarrow & & \downarrow f \\
0_{AB} & & B
\end{array} \]

be the kernel of \( f \). Note that \( f \circ k = 0_B \). Let

\[ \begin{array}{ccc}
K & \xrightarrow{k} & A \\
\downarrow & & \downarrow p \\
0_{KA} & & C
\end{array} \]

be the cokernel of \( k \).
Then,

\[ \begin{array}{c}
K \xrightarrow{k} A \xrightarrow{p} C \\
K \xrightarrow{0_{KA}} A \xrightarrow{f} B
\end{array} \]

commutes, which implies that there exists a unique map \( i \) so that
commutes. In other words, that $f = i \circ p$. Since $p$ is a cokernel, it is a strong epic. Thus, we have left to prove only that $i$ is monic.
So, suppose that $x : X \rightarrow C$ is a map so that $i \circ x = 0$. Let

$$
X \xrightarrow{x} C \xrightarrow{r} R \xrightarrow{0_{XC}}
$$

be the cokernel diagram for $x$. 
Then, by assumption,

\[ X \xrightarrow{0_{XC}} C \xrightarrow{r} R \]

commutes.
Thus, there exists a unique map $q$ so that

\[
\begin{array}{c}
B \\
\downarrow^i \\
X \xrightarrow{x} C \\
\downarrow^{0_{XC}} \\
0 \rightarrow R
\end{array}
\]

commutes. Now, since both $r$ and $p$ are epic, so is $r \circ p$. Since we are in an Abelian category, there must exist an arrow $h : H \rightarrow A$ so that
is a cokernel diagram.
Now,

\[ f \circ h = i \circ p \circ h \]  
\[ = q \circ r \circ p \circ h \]  
\[ = q \circ 0_{HR} \]  
\[ = 0 \]

(1) \hspace{2cm} \text{since } i = q \circ r \quad (2) \hspace{2cm} r \circ p \circ h = 0 \quad (3)

the composition of \quad (4)

In other words we have the commutative diagram

\[
K \xrightarrow{k} A \xrightarrow{f} B
\]

\[
0_{AB}
\]

\[
h
\]

\[
H
\]

which, of course, implies that there exists a unique map \( l \) so that
commutes. Now,

\[ p \circ h = p \circ k \circ l \]  \hspace{1cm} (5)

\[ = 0_{KC} \circ l \]  \hspace{1cm} (6)

\[ = 0_{HC} \]  \hspace{1cm} (7)

In other words,
commutes. This implies that there exists a unique $n$ so that
commutes. In other words, that \( n \circ r \circ p = p = 1_{Ap} \). But remember, that \( p \), being the cokernel of \( k \) is epi.
Thus, $n \circ r = 1_A$, which implies that $r$ is monic. But, $r$, by definition, is a map so that $r \circ x = 0_X$. Since $r$ is monic, we must have that $x = 0$. At the start of all this, though, we let $x$ be an arbitrary map with the property that $i \circ x = 0$. Since this implies that $x$ must also be 0 we see that $i$ is monic. The uniqueness of this factorization is an immediate consequence of a previous lemma.