Section 14.2: Limits and continuity for $z = z(x,y)$

Definition (intuitive): The limit of $z(x,y)$ as $(x,y)$ approaches the point $(a,b)$ is $L$ if the values of $z(x,y)$ can be made arbitrarily close to $L$ by evaluating $z(x,y)$ at all points $(x,y)$ sufficiently close $(a,b)$.

Example 3: $z(x,y) = \frac{x^2 - y^3}{x^2 - y^2}$

Example 4: $z(x,y) = \frac{xy^2}{x^2 + y^4}$

Definition: Let $z(x,y)$ be defined on a domain, $D$, with $(a,b)$ in $D$. We say $z(x,y)$ is continuous at $(a,b)$ if $z(a,b)$ agrees with the limit of $z(x,y)$ as $(x,y)$ approaches $(a,b)$. We say $z(x,y)$ is continuous on $D$ if $z(x,y)$ is continuous at every point in $D$. 