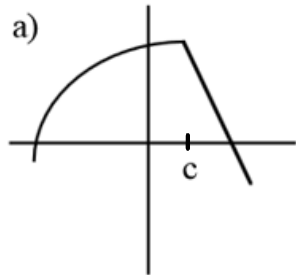
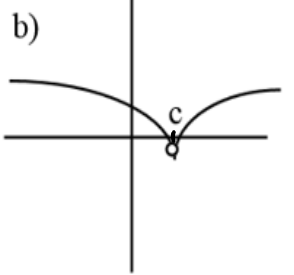
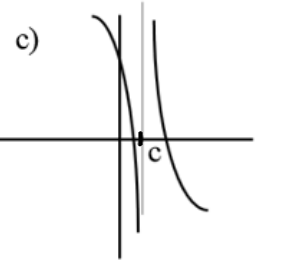
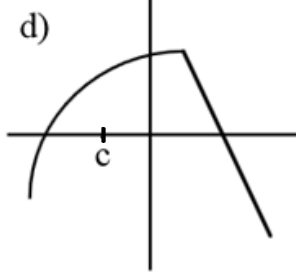
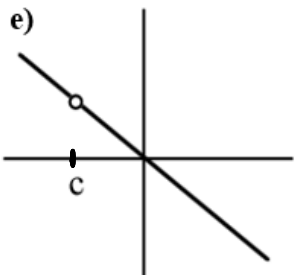
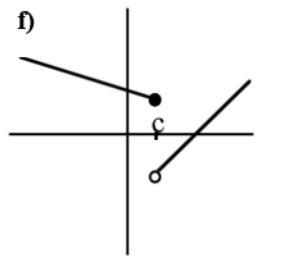
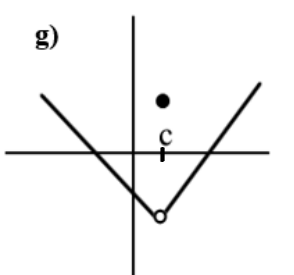
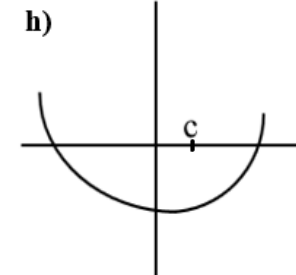


Connecting Differentiability and Continuity

For the following, state whether the function, $g(x)$, is continuous, differentiable, both, or neither at $x = c$.

<p>a)</p>  <p>A graph showing a function $g(x)$ on a coordinate plane. The function is smooth and concave down for $x < c$ and smooth and concave up for $x > c$. At $x = c$, there is a sharp corner, indicating that the function does not have a unique tangent line at that point.</p>	<p>b)</p>  <p>A graph showing a function $g(x)$ on a coordinate plane. The function is smooth and concave down for $x < c$ and smooth and concave up for $x > c$. At $x = c$, the function has a cusp, where the slope is zero from both sides, but the sharp point indicates it is not differentiable.</p>	<p>c)</p>  <p>A graph showing a function $g(x)$ on a coordinate plane. The function has a vertical asymptote at $x = c$, indicated by a vertical line. The function approaches positive infinity from the left and negative infinity from the right of the asymptote.</p>	<p>d)</p>  <p>A graph showing a function $g(x)$ on a coordinate plane. The function is smooth and concave down for $x < c$ and smooth and concave up for $x > c$. At $x = c$, there is a sharp corner, indicating that the function does not have a unique tangent line at that point.</p>
<p>e)</p>  <p>A graph showing a function $g(x)$ on a coordinate plane. The function is a straight line with a negative slope. At $x = c$, there is a jump discontinuity: the function has an open circle at a point above the x-axis and a closed circle at a point below the x-axis.</p>	<p>f)</p>  <p>A graph showing a function $g(x)$ on a coordinate plane. The function consists of two line segments. The left segment ends at a closed circle at $x = c$, and the right segment starts at an open circle at $x = c$. There is a jump discontinuity at $x = c$.</p>	<p>g)</p>  <p>A graph showing a function $g(x)$ on a coordinate plane. The function is a V-shape with a sharp corner at $x = c$. There is a removable discontinuity at $x = c$: there is an open circle at the vertex of the V and a solid dot above it.</p>	<p>h)</p>  <p>A graph showing a function $g(x)$ on a coordinate plane. The function is a smooth parabola opening upwards. At $x = c$, there is a removable discontinuity: there is an open circle at the vertex of the parabola and a solid dot above it.</p>