In problems where a calculator is used do not round, use the full display. If $\$ is calculated round to 2 decimal places.

1) For $T(x) = \sqrt{\frac{x}{2-x}}$ find the domain of $T(x)$, $D_T$. Write your answer in interval notation.

$D_T =$

2) Find the vertex of the parabola: $Q(x) = 0.2x^2 - 13x + 11$.

3) For $f(x) = \frac{x}{x+1}$ & $g(x) = \frac{1}{x^2}$ evaluate and simplify: $f(g(x))$.

$f(g(x)) =$
4) Use the graph of \( f(x) \) below to evaluate the limits.

a) \( \lim_{x \to -3^-} f(x) = \)

b) \( \lim_{x \to -3^+} f(x) = \)

c) \( \lim_{x \to 3^-} f(x) = \)

d) \( f(3) = \)

5) Find the average rate of change of the function \( g(x) = 2x^2 - 5x + 1 \) between the points where \( x = 1 \) and \( x = 4 \).
6) For $f(x) = x^2 - 4x + 3$ find $f'(x)$ using the formal definition of the derivative.

7) A car worth $40,000 depreciates by 22% per year. Find its value after 30 months.

8) State or complete:

   a) formal definition of the derivative:

   $f'(x) =$

   b) $f(x)$ is continuous at $x = a$ if