

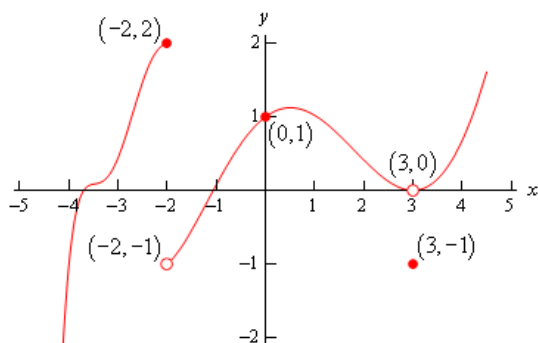
YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Consider the function $f(x) = x^2 - 7x$. Find and simplify the difference quotient $\frac{f(x+h) - f(x)}{h}$ of f .

2. Consider the graph of the function f and determine the following quantities:



$$\begin{array}{llll}
 f(-2) = & \lim_{x \rightarrow -2^-} f(x) = & \lim_{x \rightarrow -2^+} f(x) = & \lim_{x \rightarrow -2} f(x) = \\
 f(3) = & \lim_{x \rightarrow 3^-} f(x) = & \lim_{x \rightarrow 3^+} f(x) = & \lim_{x \rightarrow 3} f(x) =
 \end{array}$$

3. Evaluate the following limit:

$$\lim_{x \rightarrow -5} \frac{-x^2 - 3x + 10}{x^2 - 4x - 45} =$$