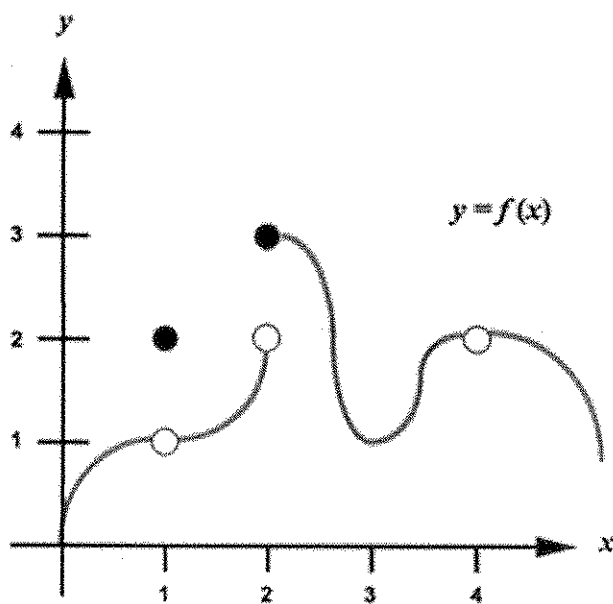


Group Quiz 1
 Dusty Wilson
 Math 148

Name: KEY

No work = no credit

(1.1) Use the graph of $f(x)$ to answer the following.



a.) $f(1) = \underline{2}$

b.) $f(2) = \underline{3}$

c.) $f(3) = \underline{1}$

1 / ea.

d.) $f(4) = \underline{\text{undef. or DNE}}$

e.) $\lim_{x \rightarrow 1} f(x) = \underline{1}$

f.) $\lim_{x \rightarrow 2} f(x) = \underline{\text{DNE}}$

g.) $\lim_{x \rightarrow 3} f(x) = \underline{1}$

h.) $\lim_{x \rightarrow 4} f(x) = \underline{2}$

i.) Is f continuous at $x=1$? Explain.

No / $\lim_{x \rightarrow 1} f(x) \neq f(1)$

(1.2) Suppose $g(x) = \frac{x^2 - 5x - 14}{x^2 - 6x - 7}$. Answer the following:

5 a.) $g(7) = \frac{9}{8}$ und.

$$g(x) = \frac{(x-7)(x+2)}{(x-7)(x+1)}$$

7 b.) $\lim_{x \rightarrow 7} g(x) = \frac{9}{8}$

$$\lim_{x \rightarrow 7} \frac{x+2}{x+1} = \frac{9}{8}$$

2 pts

$$\lim_{x \rightarrow \infty} \frac{1 - \frac{5}{x} - \frac{14}{x^2}}{1 - \frac{6}{x} - \frac{7}{x^2}} = 1$$

8 c.) $\lim_{x \rightarrow \infty} g(x) = 1$

(1.3) The number of students per computer in U.S. public schools (1984 – 2006) can be modeled with the function $C(y) = \frac{330 - 6y}{2y - 4.5}$ where y is the number of years past the school year ending in 1981.

5 a.) Is this function continuous for school years from 1985 onward? Explain.

Yes... it only has issues @ $y = 2.25$ or in 1983.

15 b.) Find the long-range projection of this model by finding the $\lim_{y \rightarrow \infty} C(y)$. Explain what this tells us about the validity of the model.

$$\lim_{y \rightarrow \infty} \frac{330 - 6y}{2y - 4.5} = \lim_{y \rightarrow \infty} \frac{\frac{330}{y} - 6}{2 - \frac{4.5}{y}} = -3$$

lpc.

5 → This means "-3" students/computer which doesn't make sense. This model is only valid on $3 \leq y \leq 25$