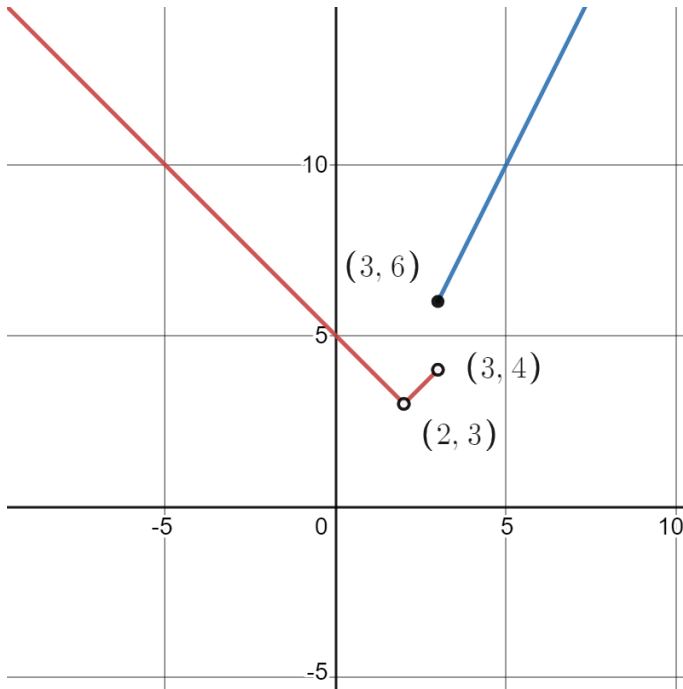Chapter 1 Extra Practice test Part 1 (should complete all the problems)

1) Below is a graph of the function $f(x)$.

Find the following.

a) f(2)

b) f(3)

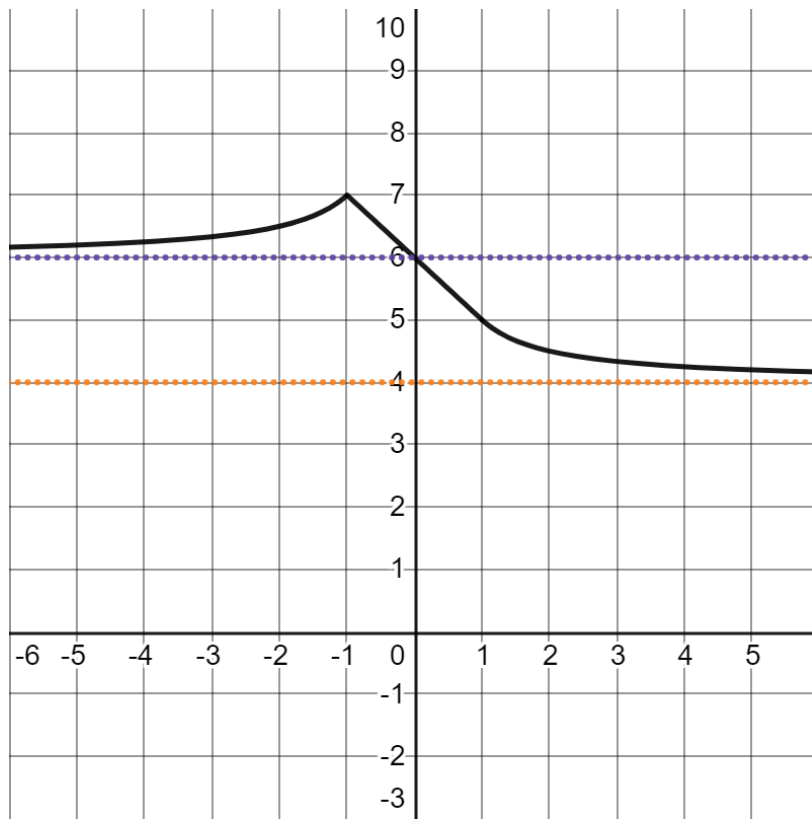c) $\lim\limits_{x \to 3^-} f(x)$

d) $\lim\limits_{x \to 3^+} f(x)$

e) $\lim\limits_{x \to 3} f(x)$

f) $\lim\limits_{x \to 2^-} f(x)$

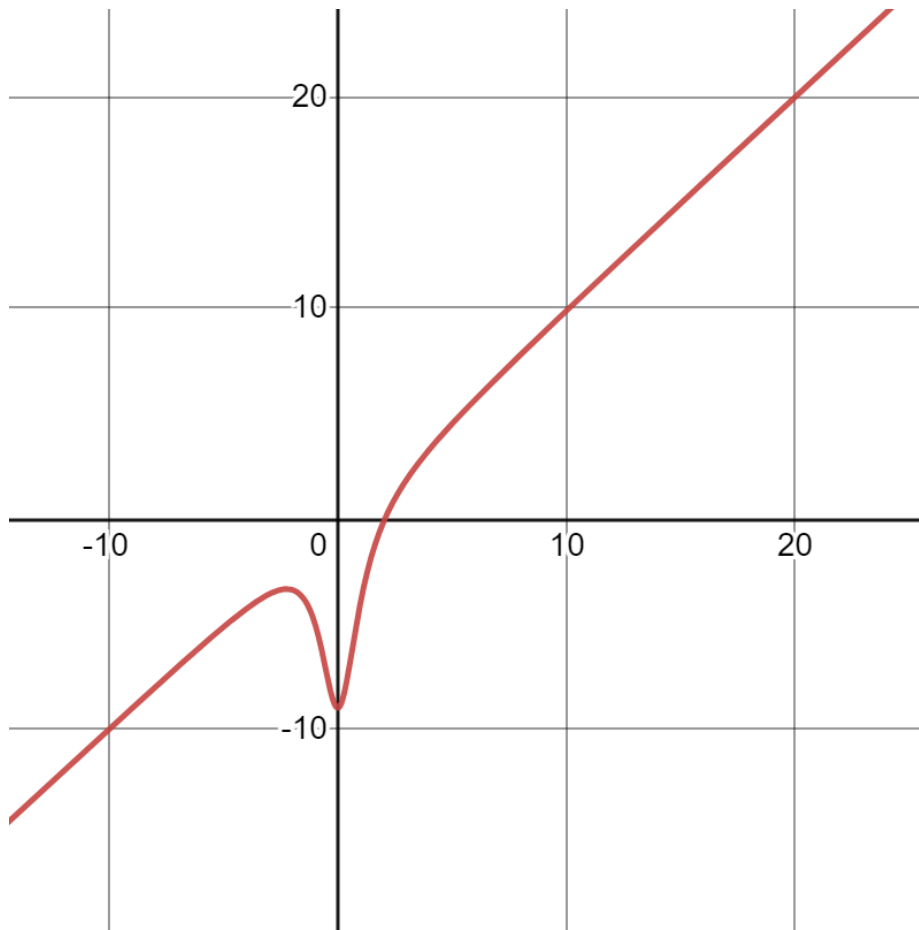g) $\lim\limits_{x \to 2^+} f(x)$

h) $\lim\limits_{x \to 2} f(x)$

2) Below is a graph of the function $f(x)$. Find the following.

a) $\lim\limits_{x \to \infty} f(x) =$

b) $\lim\limits_{x \to -\infty} f(x)$

3) Below is a graph of the function $f(x)$. Find the following.

a) $\lim\limits_{x \to \infty} f(x)$

b) $\lim\limits_{x \to -\infty} f(x)$

4) Find the following limits using Algebra.

a) $\lim\limits_{x \to 3}(2x^2 + x - 3)$

b) $\lim\limits_{x \to -2}\dfrac{x^2+6x+8}{x^2+5x+6}$
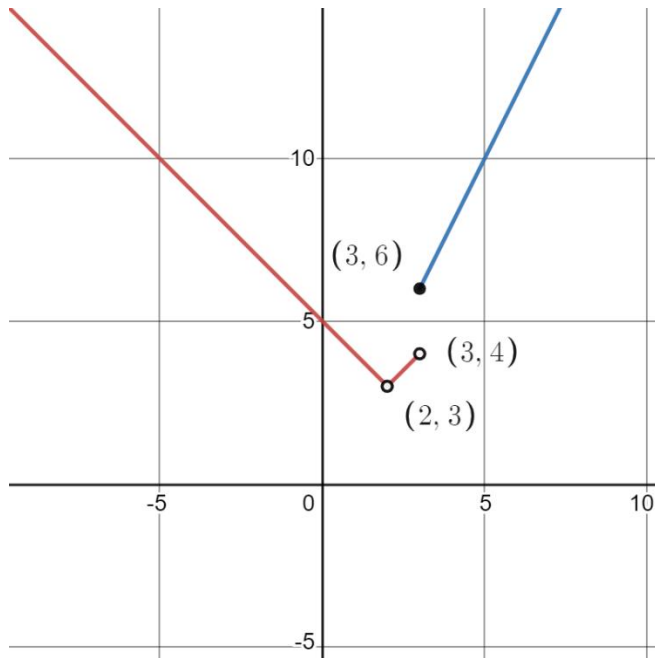
c) $\lim\limits_{x \to 81}\dfrac{\sqrt{x}-9}{x-81}$

5) Find the following limits using Algebra.

a) $\lim\limits_{x \to \infty}\dfrac{6x+1}{4x-5}$

b) $\lim\limits_{x \to \infty}\dfrac{2x-3}{x^2-6x+4}$

6) Find all values of $x = a$ where the function $f(x)$ is discontinuous. State if the function is continuous everywhere. You do not need to state the reason the function is discontinuous.

$(3, 6)$

$(3, 4)$

$(2, 3)$

7) Find all values of $x = a$ where the function $f(x)$ is discontinuous. State if the function is continuous everywhere. You do not need to state the reason the function is discontinuous.If the function is continuous everywhere simply answer the function is continuous everywhere.

7a) $f(x) = \frac{x+3}{x^2+2x-24}$ 7b) $f(x) = x - 6$

Chapter 1 Extra Practice Test Part 2

8) Find the average rate of change for each function over the given interval. It is not necessary to sketch a graph to model the average rate of change.

$f(x) = x^2 + 5$ between x = 0 and x = 1

9) f(x) = x² + 2
a) Use the definition of the derivative to find f'(x)
b) Find f'(3)

10) $f(x) = \frac{7}{x}$
Find a formula to find the slope of a tangent line.

11) A toy rocket is launched straight up so that its height s, in meters, at time t, in seconds, is given by $s(t) = -2t^2 + 64t.$

Given $s'(t) = -4t + 64$
a) Find s'(12)
b) Interpret your answer to part a