

1.3-1.4 Quiz Review Classwork

Date: _____

Determine whether each function is continuous at $x=-5$. Justify your answer using the continuity test.

1. $f(x) = \frac{x^2 - 25}{x + 5}$

$f(-5) = \frac{(-5)^2 - 25}{-5 + 5}$
 $= \text{undefined}$

x	-5.1	-5.01	-5.001	-5	-4.999	-4.99	-4.9
f(x)	-10.1	-10.01	-10.001	undefined	-9.999	-9.99	-9.9

$\xrightarrow{-10}$ $\xleftarrow{-10}$

removable discontinuity; $\lim_{x \rightarrow -5} f(x) = -10$

2. $f(x) = \frac{x^2}{x + 5}$

$f(-5) = \frac{(-5)^2}{-5 + 5}$
 $= \text{undefined}$

x	-5.1	-5.01	-5.001	-5	-4.999	-4.99	-4.9
f(x)	-266.1	-2510.01	-25010	undefined	24990.001	2490.01	240.1

$\xrightarrow{-\infty}$ $\xleftarrow{\infty}$

infinite discontinuity; $\lim_{x \rightarrow -5} f(x) = \text{does not exist}$

Determine between which consecutive integers the real zeros of each function are located on the given interval.

3. $f(x) = -x^3 + 6x + 2; [-4, 4]$

x	-4	-3	-2	-1	0	1	2	3	4
f(x)	42	11	-2	-3	2	7	6	-7	-3

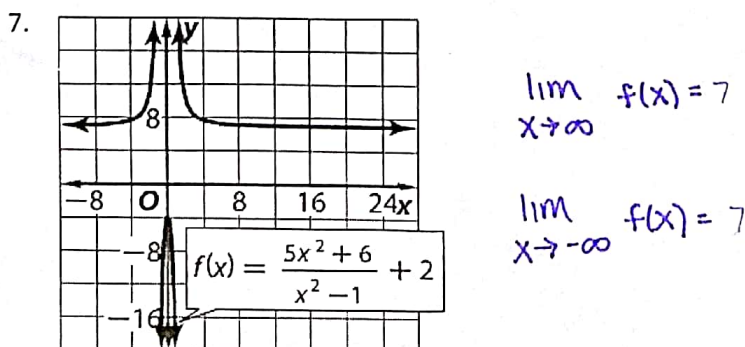
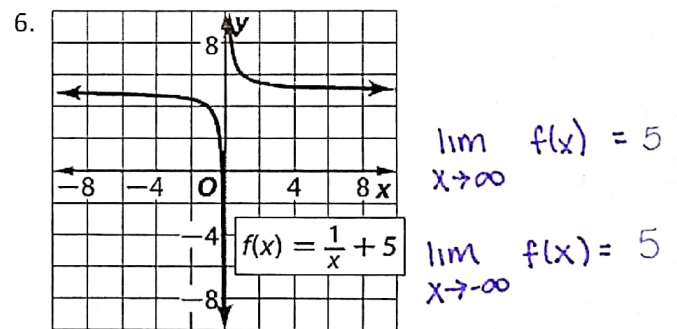
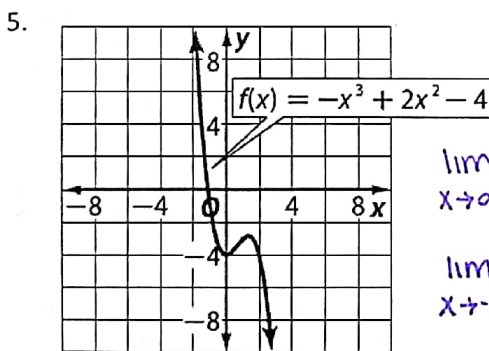
There are real zeros between -3 and -2, -1 and 0, 2 and 3.

4. $f(x) = 2x^4 - 3x^3 + x^2 - 3; [-3, 3]$

x	-3	-2	-1	0	1	2	3
f(x)	888	125	2	-3	-4	-67	-570

There are real zeros between -1 and 0.

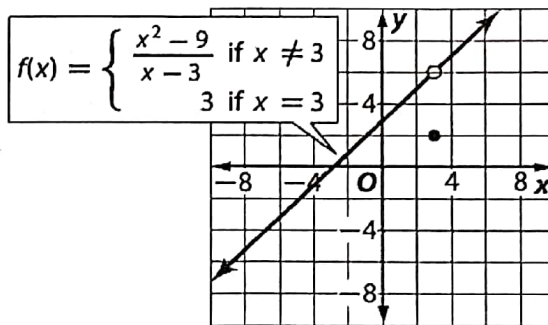
Use the graph of each function to describe its end behavior.



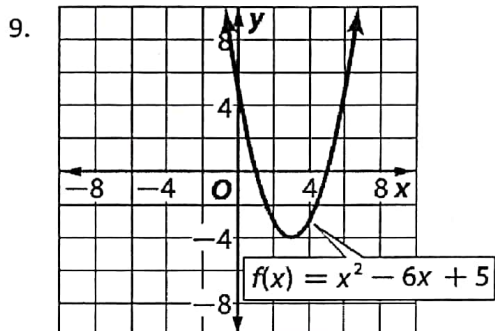
Multiple Choice

8. The graph of $f(x)$ contains a(n) _____ discontinuity at $x = 3$

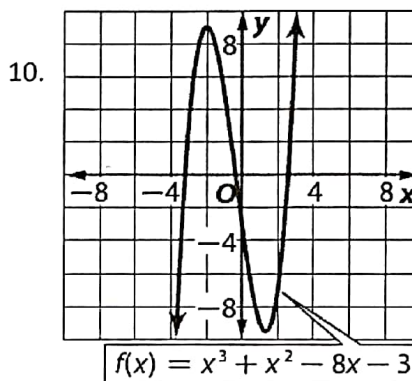
- a) Undefined
- b) Infinite
- c) Jump
- d) Removable



Use the graph of each function to estimate intervals to the nearest 0.5 unit on which the function is increasing, decreasing, or constant.



increasing: $(3, \infty)$
 decreasing: $(-\infty, 3)$



increasing: $(-\infty, -2) \cup (1.28, \infty)$
 decreasing: $(-2, 1.28)$

11. Using the equations from 9 & 10 determine all extrema.

9: absolute min $(3, -4)$

10: relative max: $(-2, 9)$

relative min: $(1.28, -9.5)$