Honors PreCalc
Unit 2 Quiz 1 Review

U2LT2 I can find a function relative and absolute max/min as well as intervals in increase, decrease and constant.

Find the increase, decrease, constant, max and min of each functions.

1. $f(x) = -(x+3)^2$

Increase from $x \in (-\infty, -3]$
Decrease when $x \in [-3, \infty)$
    Max of 0 at $x = -3$

2. $f(x) = \dfrac{x^2}{x^2 - 25}$

Increase $x \in (-\infty, -5) \cup (-5, 0)$
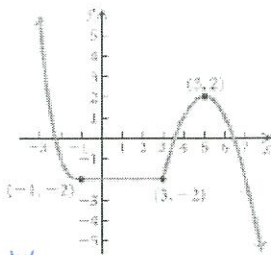Decrease $x \in (0, 5) \cup (5, \infty)$
   Local max of 0 at $x = 0$

3. $g(x) = |x - 2| + 1$

Decrease
~~Increase~~ from $x \in (-\infty, 2]$
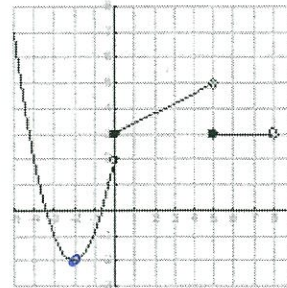Increase from $x \in [2, \infty)$
   Min of 1 at $x = 2$

4.

Increase when $x \in [3, 5)$
Decrease when $x \in (-\infty, -1] \cup [5, \infty)$
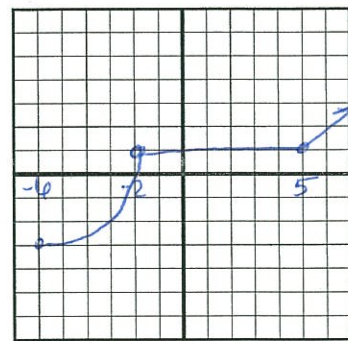Constant when $x \in [-1, 3]$

5.

Decrease when $x \in (-\infty, -2]$
Increase when $x \in (-2, 0) \cup [0, 5)$
Constant when $x \in [5, 8)$

5. Given the following graph the function:
Function that increasing on the interval (-6, -2),
constant at (-2, 5) and increasing at (5, ∞).

Name a point where the graph is increasing. $(6, 2)$
Name a point where it is constant. $(0, 1)$
Name a point where it is decreasing. ∅

L2LT2 I can identify if a function is continuous or not. I can state the type of discontinuity if one is found.

6. $f(x) = \dfrac{x-2}{x^2 - 4}$

NOT continuous
inf. discontinuity at
     $x = -2$
removeable discontinuity
     at $x = 2$

7. $f(x) = \dfrac{-4x^2 + 5}{3}$

Continuous

8. $f(x) = \begin{cases} 2x^2 + 1 \text{ for } x < 3 \\ x - 5 \text{ for } x \geq 3 \end{cases}$

Cont
Cont

At $x = 3$ → 19
     → -2

Jump discontinuity
at $x = 3$

9. $f(x) = \begin{cases} -x + 4 \text{ for } x \neq 1 \\ 4 \text{ for } x = 1 \end{cases}$
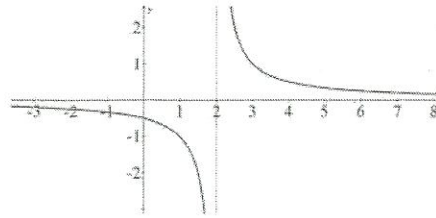
Removeable
discontinuity
at $x = 1$

10.
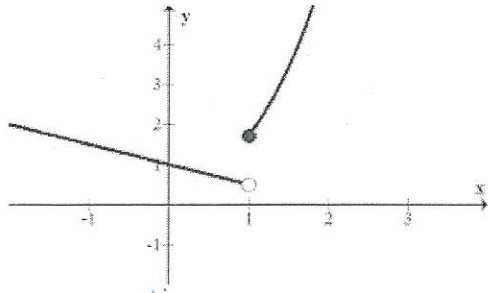
Not continuous.
Jump discontinuity at $x = 1$

11.

Not Continuous
Infinite discontinuity at $x = 2$

U2LT3 I can describe a function's end behavior using limit notation.

State the end behaviors of the functions.

12. $f(x) = \dfrac{x-2}{x+4}$

$\lim\limits_{x \to \infty} f(x) = 1$

$\lim\limits_{x \to \infty} f(x) = 1$

13. $f(x) = -5x^4 + 6x^2 - 7$

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

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

14. $f(x) = \dfrac{5x}{x^2-4}$

$\lim\limits_{x \to \infty} f(x) = 0$

$\lim\limits_{x \to -\infty} f(x) = 0$

15) $f(x) = \dfrac{3x}{x^2+1}$

$\lim\limits_{x \to \infty} f(x) = 0$

$\lim\limits_{x \to -\infty} f(x) = 0$

16. $g(x) = -3x^3 + 2x + 1$

$\lim\limits_{x \to \infty} g(x) = -\infty$

$\lim\limits_{x \to -\infty} g(x) = \infty$

17. $h(x) = x^5 + 10x - 7$

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

$\lim\limits_{x \to -\infty} h(x) = -\infty$

18. $f(x) = 4x^4 + 3x^2 - 6x$

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

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

19. $g(x) = -3x^{200} + 4x - 7$

$\lim\limits_{x \to \infty} g(x) = -\infty$

$\lim\limits_{x \to -\infty} g(x) = -\infty$