

Name:
DUE: **April 7th, 2020**

Honors Math III
Spring Break Review

Hi Math III,

While Spring Break came sooner than expected, you all deserve this time off- so enjoy it! However, make sure you are taking a little bit of time to stay sharp on your math skills. Below are 23 review problems from Quarter 3 (which is only one problem per day) to make sure you are prepared for the Interim Assessment when we return.

The problems at the end are ***Above & Beyond*** geometry review. However, if our break is extended due to the coronavirus you will be required to complete those as well. If you do not have access to a calculator (or a computer to use an online graphing calculator), do all the work up until what you would put in your calculator.

On a more serious note, there is a lot of uncertainty due to COVID-19. Please prioritize your health and your family's safety during this time. Make sure you are staying inside and away from large groups/public spaces as much as possible. Just because you are not displaying any symptoms doesn't mean you can't spread the disease to others.

If you and your family need anything during this time (or if you just need some help with math) don't hesitate to reach out. You can email me at ldennis@hendersoncollegiate.org or call me at **(631)-560-4540**.

♥, Ms. Dennis

1.)	2.)	3.)	4.)	5.)	6.)
7.)	8.)	9.)	10.)	11.)	12.)
13.)	14.)	15.)	16.)	17.)	18.)
19.)	20.)	21.)	22.)	23.)	

1.) Which value of x satisfies the equation $\log_2(x - 4) = 2$?

- A.) 12
- B.) 16
- C.) 8
- D.) 20

2.) Which function goes to positive ∞ most quickly as x increases?

- A.) $y = 50e^{2x}$

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B.) $y = x^2 + 9x + 11$

C.) $30(1.75)^{2x}$

D.) $y = \log(6x) + 55$

3.) Which choice shows the solutions to the equation : $8x^2 + 7x - 15 = -7$?

A.) $\frac{7 \pm \sqrt{305}}{16}$

B.) $\frac{-7 \pm \sqrt{305}}{16}$

C.) $\frac{-7 \pm i\sqrt{175}}{16}$

D.) $\frac{7 \pm i\sqrt{175}}{16}$

4.) Simplify $\frac{x^2-16}{x^2-2x-8} \div \frac{x^2-5x-36}{x^2-3x-54}$

A.) $\frac{x+2}{x+4}$

B.) $\frac{(x+4)^2}{x^2+8x+12}$

C.) 4

D.) $\frac{x+6}{x+2}$

5.) Which is an equation of a parabola that has a directrix of $y = -5$ and a focus at $(2, -1)$?

A.) $y = \frac{1}{2}(x+2)^2 + 2$

B.) $y = \frac{1}{8}(x+2)^2 + 3$

C.) $y = \frac{1}{8}(x-2)^2 - 3$

D.) $y = \frac{1}{2}(x-2)^2 - 2$

6.) Which expression is equivalent to $(4 + 3i)^2 + (6 - i)^2$?

A.) 30

B.) $42 + 12i$

C.) 50

D.) $42 - 12i$

7.) A box with an open top will be constructed from a rectangular piece of cardboard.

– The piece of cardboard is 8 inches wide and 10 inches long.

– The box will be constructed by cutting out equal squares of side x at each corner and then

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folding up the sides.

What is the entire domain for the function $V(x)$ that gives the volume of the box as a function of x ?

- A.) $0 < x < 10$
- B.) $0 < x < 8$
- C.) $0 < x < 5$
- D.) $0 < x < 4$

8.) Solve $\sqrt{x+4} = x - 2$.

- A.) $x = 0$
- B.) $x = 0, 5$
- C.) $x = 5$
- D.) *No solutions*

9.) *Camaria has decided to contribute \$75 annually to a mutual fund to raise money for college. Her account will earn 14% interest annually, how much money can she expect to be in the account after 15 years?*

- A.) \$3,289
- B.) \$58
- C.) \$0
- D.) \$356

10.) *What is the 99th term in the following arithmetic sequence: 600, 590, 580...*

- A.) -380
- B.) -390
- C.) -400
- D.) -410

11.) When a baseball is first released from the pitcher's hand it is traveling at a speed of 85 mph. As it travels towards the catcher, its speed decreases by a fourth every second. Which of the following equations models the speed of the baseball? (Assume begin at $n=1$)

A.) $a_n = 85 - 0.25(n - 1)$

B.) $a_n = 85 - 1.75(n - 1)$

C.) $a_n = 85(.25)^{n-1}$

D.) $a_n = 85(.75)^{n-1}$

12.) Given the equation $8x^5 - 10x^4 - 17x^2 = -10$, which of the following root combinations are possible?

- I. 3 real, 2 complex roots
- II. 2 real, 4 complex roots
- III. 2 real, 3 complex roots

A.) I only

B.) I and III

C.) I and II

D.) I, II, and III

13.) A system of equations is shown below.

$$y = |x - 3|$$

$$y = (1/3)x$$

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What is the distance between the points of intersection of the system?

- A.) 1.5
- B.) 2.4
- C.) 2.7
- D.) 3.4

14.) *A colony of ants currently has a population of 350. The colony increases by 3% daily where growth compounds continuously. Approximately how many days will it take the population to grow to 10,000?*

- A.) 111
- B.) 112
- C.) 113
- D.) 114

15.) *The equation $2x^2 + 3x = 4$ is rewritten in the form $2(x - h)^2 + q = 0$. What is the value of q ?*

- A.) -4.375
- B.) 0.75
- C.) -5.125
- D.) -5.875

16.) *Suppose $p(x) = 5x^3 + 2x^2 + ax + 14$. The remainder of the division of $p(x)$ by $(x - 2)$ is 44.*

What is the remainder of the division of $p(x)$ by $(x + 3)$?

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A.) 140

B.) - 76

C.) - 9

D.) 20

17.) *In a city, several houses make up a single city block. If 2 people live in the first house, 4 in the second, 8 in the third, etc. If the city block includes 20 houses, how many people live in the last house?*

A.) 122

B.) 1,586,847

C.) 1,048,575

D.) 2,097,150

18.) *Suppose $h(x) = 5x^3 - 2x^2 + ax - b$. If the remainder of the division of $h(x)$ by $(x + 3)$ is -178 , and the remainder of $h(x)$ by $(x - 2)$ is 47 , what is the value of $2a + b$?*

A.) 8

B.) 1

C.) 17

D.) 15

19.) *Which of the following functions is odd?*

A.) $(x - 9)(x + 3)$

B.) $x(x^2 - 2)$

C.) $(x - 1)(x + 1)$

D.) $x^3 + 2x - 1$

20.) *Which of the following represents the vertical asymptotes of the $f(x)$ if $f(x) = \frac{12x^2 - 10x + 4}{(x - 2)(x + 3)}$?*

A.) $x = -2$ $x = 3$

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B.) $x = 2x - 3$

C.) $y = -2y = 3$

D.) $x = -4x - 10$

34.) Which of the following functions is odd?

A.) $(x - 9)(x + 3)$

B.) $x^2 + 2x - 2$

C.) $(x - 1)(x + 1)$

D.) $x^3 - 2x$

22.) Which function is even?

A.) $f(x) = (x + 2)(x - 2)$

B.) $f(x) = x(x + 2)$

C.) $f(x) = (x + 1)(x - 2)$

D.) $f(x) = (x - 1)(x - 1)$

23.) Which of the following most accurately describes the transformation between the appearance of the graph of the parent function $p(x)$ and $t(x)$?

$$p(x) = (x + 5)^2 - 1$$

$$t(x) = (x - 3)^2 + 1$$

A.) up 2 and 8 to the right

B.) down 2 and 2 to the right

C.) down 2 and 8 to the left

D.) up 2 and 2 to the left