College Algebra Math 1050

Sample Midterm Exam Version 2 - *Rubric*

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1. $\pm\frac{1}{3}, \pm 1, \pm\frac{2}{3}, \pm 2$ **(3 pts)** all or nothing

2. $x = \frac{1}{3}$ **(3 pts)** all or nothing

3. $x = \sqrt{5},\ x = -\sqrt{5}$ **(3 pts)** all or nothing

4. $x = 3i + 2$ **OR** $x = 2 + 3i$ **(3 pts)** all or nothing

5. $(f + g)(2) = 8$ **(3 pts)** all or nothing

6. $x = 1, x = 3$ **(3 pts)** all or nothing

7. $(-\infty, -4) \cup (4, \infty)$ **(2 pts)** all or nothing

8. $D\,(f - g) = \{x | x \neq 2, x \geq 1\}$ **(4 pts)** all or nothing

any correct form of the answer is acceptable

9. $\dfrac{\left[(x+h)^2 - 3\,(x+h) + 1\right] - \left[x^2 - 3x + 1\right]}{h}$ **(4 pts)** all or nothing

10. **(a)** $\left(\dfrac{\sqrt{x+h} - \sqrt{x}}{h}\right)\left(\dfrac{\sqrt{x+h} + \sqrt{x}}{\sqrt{x+h} + \sqrt{x}}\right)$ **(4 pts)** all or nothing

11. $x \neq -3, x \neq -2$ **(1 pt)** all or nothing

any correct form of the answer is acceptable

12. $\left(-\frac{3}{2}, 0\right)$ *answer must be written as an ordered pair* **(1 pt)** all or nothing

13. $\left(0, \frac{1}{2}\right)$ *answer must be written as an ordered pair* **(1 pt)** all or nothing

14. $x = -3$ *answer must be written as an equation* **(2 pts)** all or nothing

15. $y = x - 2$ *answer must be written as an equation* **(2 pts)** all or nothing

16. $(-4, 0), (2, 0), (3, 0)$ *answer must be written as an ordered pair* **(3 pts)** all or nothing

17. **(c)** **(3 pts)** all or nothing

18. 2 seconds *(unit not necessary)* **(4 pts)** all or nothing.

19. **(c)** $\dfrac{1}{x+1} - \dfrac{2}{x-3} < 0$ **(3 pts)** all or nothing

20. $(-\infty, -2) \cup [1, 3]$ **(3 pts)** all or nothing

21. **(c)** $|x - 1| \geq 5$ **(4 pts)** all or nothing

22. $\left(-\frac{1}{2}, 0\right) \cup (1, \infty)$

(8 pts) For correct answer with supporting work. All brackets must be correct

If the answer is NOT correct:

(2 pts) For choosing the correct denominator to simplfy

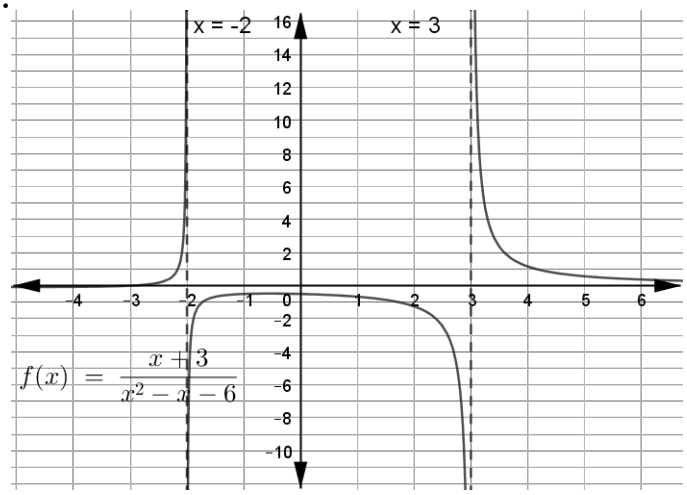
(3 pts) For correct expression compared to zero

OR

(3 pts) For listing the correct restrictions on the domain

(2 pts) For correct expression compared to zero

23.



(9 pts) If the graph is sketched perfectly

If the graph is NOT sketched correctly:

(3 pts) For **all** of the following:

- Graph is sketched over the entirety of the domain
- Correct number of vertical asymptotes are present on the graph
- Correct type of non-vertical asymptote is present on the graph
- Graph clearly demonstrates knowledge of asymptotic behavior

THEN

(2 pts) For **all** of the following:

- Correct x and y intercepts are present on the graph
- No extraneous intercepts are present on the graph

24. $(-\infty, \mathbf{-5}) \cup (\mathbf{9}, \infty)$

(8 pts) For correct answer with supporting work. All brackets must be correct

If the answer is NOT correct:

(4 pts) For writing two correct inequalities

OR

(4 pts) For writing two correct equalities

25. $h(500) = \mathbf{250,000}$ **dollars**

(8 pts) **For either:**

giving the correct numerical answer with supporting work

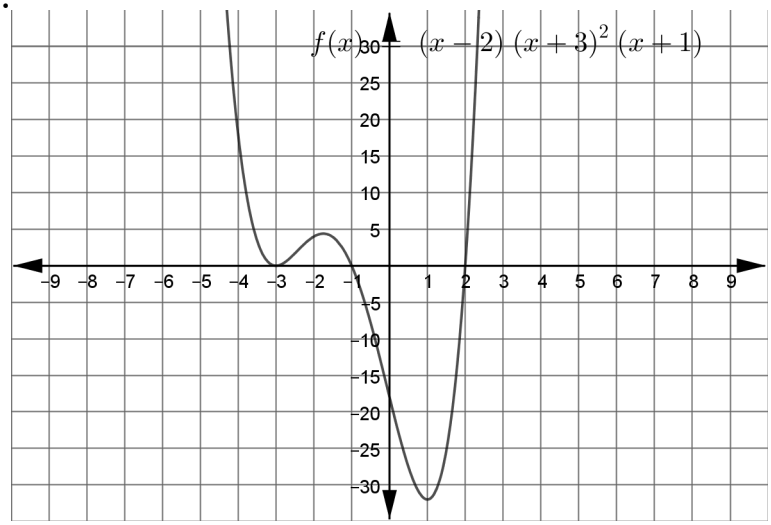
OR

an explanation that demonstrates full understanding of the procedure for finding the answer, either by finding the x coordinate of the vertex with $\dfrac{-b}{2a}$ and substituting that value into the function or by completing the square

If the answer is NOT correct:

(3 pts) For correctly setting up the quadratic equation: $R = x(1000 - x)$

26.



(8 pts) If graph is sketched appropriately.

Note: an appropriate graph will demonstrate the following:

-graph is continuous

-graph is smooth, without sharp points

-graph has correct end behavior

-graph has correct behavior at all zeros

If the answer is NOT correct:

(4 pts) For **all** of the following:

-graph is continuous

-graph is smooth, without sharp points

-graph has correct behavior at all zeros

(i.e. graph appropriately goes through or bounces at the x axis for all zeros)