

UNIT 3 TEST REVIEW

NAME: _____ PER: _____

Set 1: Give the domain, range, x and y intercepts of the following functions.

$$1. f(x) = \frac{5x^2 - 30x}{10x}$$

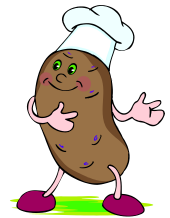
$$2. g(x) = \frac{x-3}{(\sqrt{x-1})}$$



Set 2: Determine the type of discontinuities in the functions and state them. Then list any horizontal asymptotes.

$$3. f(x) = \frac{x^2 - 16}{x^3 - 64}$$

$$4. g(x) = \frac{x-3}{2x^2 + x - 21}$$



Set 3:

5. Using the following function, $f(x) = \frac{x^2 - 3x - 18}{x^2 + x - 42}$, list the domain, range, all discontinuities, and x and y intercepts.



6. For the above function, find the limits:

$$\lim_{x \rightarrow \infty} =$$

$$\lim_{x \rightarrow -\infty} =$$

$$\lim_{x \rightarrow 6} =$$

$$\lim_{x \rightarrow -7} =$$

Set 4:

7. Find the x and y intercepts of the function: $f(x) = \frac{3x-5}{2x+7}$



8. For the following function $f(x) = x^3 + 2x^2 - 7x + 3$: Determine all local maximums and minimums. Determine the increasing and decreasing intervals.

9. Write a function that has a horizontal asymptote at $y = \frac{2}{3}$, an infinite discontinuity at 4 and

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a removable point of discontinuity at 7.

Set 5: Given $f(x) = 4x^2 - x + 3$ and $g(x) = \sqrt{x+1}$;

10. Find $(g \circ f)(x)$ and state its domain in interval notation.



11. Find $(f(g(5)))$.

12. Find $g(x+1) - f(4)$.

Set 6: State whether the function is odd, even, or neither. Support graphically and confirm algebraically.

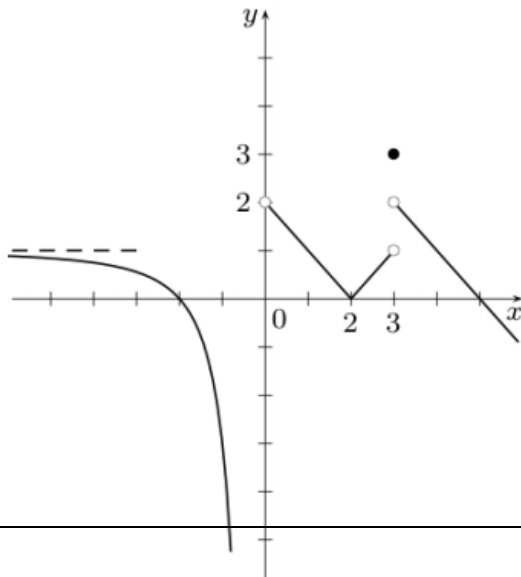
13. $f(x) = \sqrt{x^3 + x - 3}$

14. $f(x) = \frac{x^2 + x^3}{x^3}$



Set 7: Find the following limits based on the function below.

15.



- (a) $f(0) =$
- (b) $f(2) =$
- (c) $f(3) =$
- (d) $\lim_{x \rightarrow 0^-} f(x) =$
- (e) $\lim_{x \rightarrow 0} f(x) =$
- (f) $\lim_{x \rightarrow 3^+} f(x) =$
- (g) $\lim_{x \rightarrow 3} f(x) =$
- (h) $\lim_{x \rightarrow -\infty} f(x) =$



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