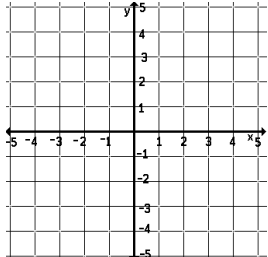


Honors Precalculus

Chapter 2 PRACTICE TEST

Name: _____ Per: _____

If you need additional space, use an extra sheet.

<p>1. Graph the following function by plotting the vertex and using “a” to find two other points.</p> $y = -3(x + 2)^2 + 5$ <p>Vertex = (,)</p> 	<p>2. Write the equation, in vertex form $f(x) = a(x - h)^2 + k$, for the parabola with x-intercepts of 5 and 7 and a maximum of 3.</p>	<p>3. Write the equation for a rational function that has a V.A. at $x = 4$, zero at $x = -3$, and a H.A. at $y = 2$.</p>
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4. A company has a large piece of land and can afford 500 feet of fencing for each plot. Find the dimensions of the rectangle that produces the maximum enclosed area and state what that area is.

Step 1: Write a perimeter and area equation. Step 2: Use substitution to write the area equation so it only contains one variable.

Step 3: Find the maximum of the area equation and state your final answer as a complete sentence.

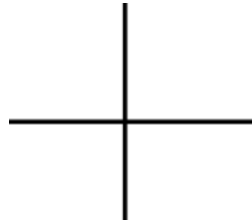
5. Circle the correct end-behavior for each.

$f(x) = -x^3 - 4x^2$ a) ↙ ↗ b) ↘ ↗ c) ↙ ↘ d) ↘ ↘	$f(x) = x^4(x - 1)$ a) ↙ ↗ b) ↘ ↗ c) ↙ ↘ d) ↘ ↘	$f(x) = -x^2 + 4$ a) ↙ ↗ b) ↘ ↗ c) ↙ ↘ d) ↘ ↘	$f(x) = x^3(x - 1)^3$ a) ↙ ↗ b) ↘ ↗ c) ↙ ↘ d) ↘ ↘
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6. Graph the polynomial below (be sure to mark your x-axis **clearly**). Also, state the y-intercept.

$$y = (x - 2)^2(x + 1)^2$$

y-intercept: (,)



7. Use the Rational Zero Theorem to a) state all possible rational roots and then b) find one that's actually a root.

$$f(x) = 4x^3 - 11x^2 + 10x - 3$$

a) Possible Rational Roots:

b) One That is Actually a Root (show how you know):

<p>8. Use either long or synthetic division to divide the following: $(5x^3 - 6x^2 + 3x + 14) \div (x + 1)$</p>	<p>9. Write the equation for a 3rd degree polynomial that has a zero at 4 with multiplicity two and a zero at -3 with $f(0) = -24$.</p>	<p>10. Use the fact that -3 is a zero of $f(x) = x^3 + 3x^2 + 4x + 12$ to find the others.</p>
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11. State the vertical, horizontal, or slant asymptote for the graph of each function and any holes.

$y = \frac{8x-8}{x^2+2x-3}$	$y = \frac{5x^2}{x^2+8x+12}$	$y = \frac{x^2-x+1}{x-3}$
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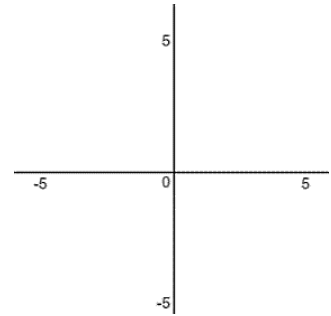
12. Put all this together and graph the rational function $g(x) = \frac{x-2}{x^2-2x-3}$

HA:

VA:

Zero(s):

Y-int:



13. Simplify and write in standard form $a + bi$

$\left(\frac{3}{4} + \frac{1}{5}i\right) - \left(\frac{2}{3} - \frac{1}{2}i\right)$	$(5 - i)^2 - (5 + i)^2$
$\frac{1-7i}{2+3i}$	$\sqrt{50} + \sqrt{-81} - \sqrt{32} + \sqrt{-16}$

14. For the function $f(x) = x^4 - 2x^3 + 8x^2 - 18x - 9$,

a) How many zeros does it have?

b) If you are told $3i$ is a zero, what other zero do you know exists? Why do you know that?