Summative Review
Secondary 3

Name:_____
Date:_____ Class:_____

Unit 1

1. Fill in each blank with the parent function that corresponds to each of the graphs given below.

_____ A)

_____ B)

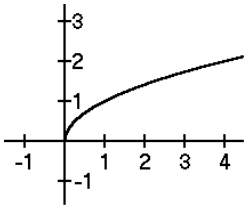
_____ C)

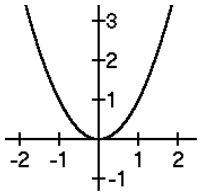
_____ D)

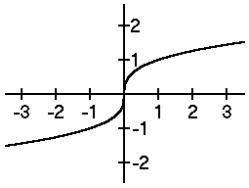
_____ E)

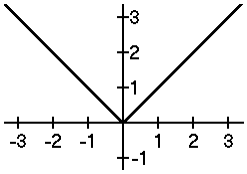
_____ F)

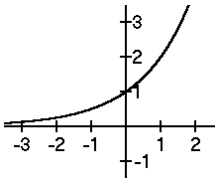
_____ G)

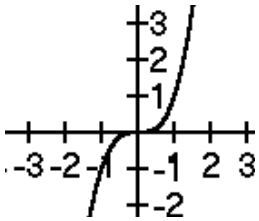
A)


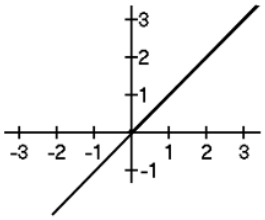
B)


C)


D)


E)


F)


G)


2. Given the parent function $f(x)$, write the equation that contains the given transformations.

a. $f(x) = \sqrt[3]{x}$

- Vertical Translation down two units
- Reflection across the y-axis

$f(x) =$ _____

b. $f(x) = |x|$

- Horizontal Translation right 3 units
- Reflection across the x-axis

$f(x) =$ _____

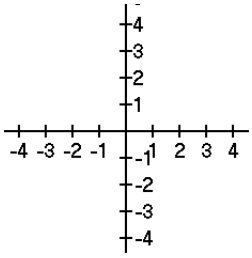
c. $f(x) = 2^x$

- Vertical Compression by a factor of 2
- Horizontal Shift left 3 units

$f(x) =$ _____

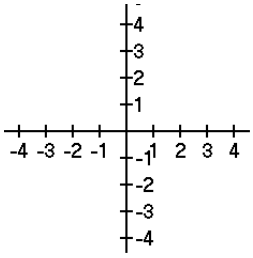
Graph the following functions **without** using a calculator. Next, identify the parent function, list the transformations involved, and also include the new domain and range.

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



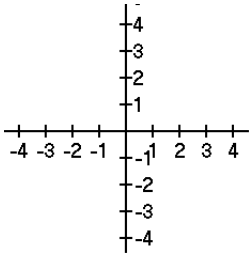
Parent Function: _____

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



Parent Function: _____

5. $i(x) = -2|x+1| - 1$



Parent Function: _____

List the transformations in words:

a) _____

b) _____

a) _____

b) _____

c) _____

a) _____

b) _____

c) _____

d) _____

Domain: _____

Range: _____

x-int: _____

y-int: _____

Left EB: _____

Right EB: _____

Inc: _____

Dec: _____

Domain: _____

Range: _____

x-int: _____

y-int: _____

Left EB: _____

Right EB: _____

Inc: _____

Dec:_____

Domain: _____

Range: _____

x-int: _____

y-int: _____

Left EB: _____

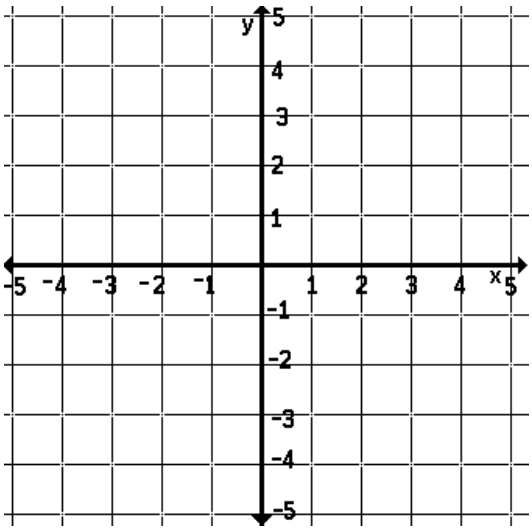
Right EB: _____

Inc: _____

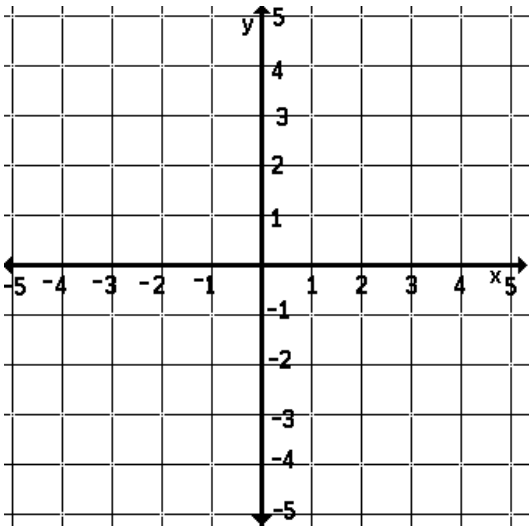
Dec: _____

Graph the piece-wise functions

6. $f(x) = \begin{cases} x+2, & -3 \le x < 0 \\ x^2 - 3, & x \ge 0 \end{cases}$

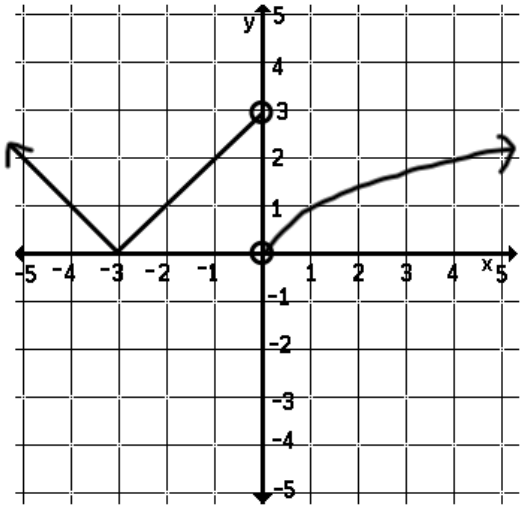


7. $f(x) = \begin{cases} (x+1)^2, & x \le -1 \\ \sqrt[3]{x}, & x > -1 \end{cases}$

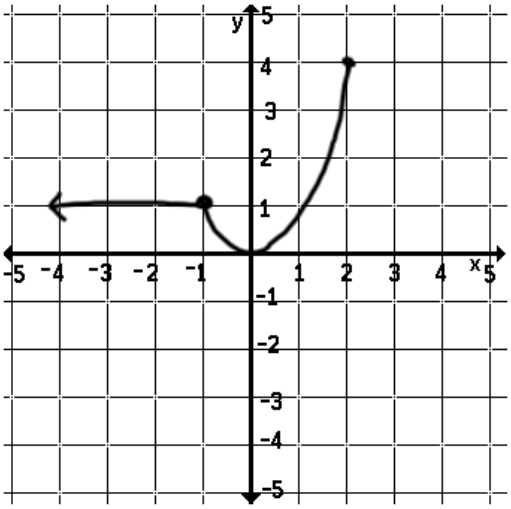


Write a function given the piecewise graphs. Be sure to include any domain restrictions!

8.



9.



Function:

Function:

Unit 2

Complete the polynomial operation.

10. $(8x^3 - 2x^2 - 4x + 8) + (5x^2 + 6x - 4)$

11. $5x(x + 2)(3x - 7)$

12. $(-4x^2 - 2x + 8) - (x^2 + 8x - 5)$

13. $(3x^3 + 12x^2 + 11x - 2) \div (x + 2)$

14. $(5x + y)^4$

15. $(4x^2 + 3x + 2)(3x^2 + 2x - 1)$

16. $(9x^4 + x^3 + 11x^2 - 4) \div (x^2 + 16)$

Factor the polynomial.

17. $3x^2 + 4x - 4$

18. $2x^3 + 4x^2 - 30x$

19. $9x^2 - 25$

20. $8x^4 + 8x^3 + 27x + 27$

Unit 3

Find **all** the zeros of the following functions

21. $f(x) = x^4 + x^3 - 14x^2 - 2x + 24$

22. $h(x) = 3x^3 - 2x^2 - 3x + 2$

23. Given the following zeros and multiplicities, write a function in factored form

a. 2 (multiplicity of 3), 5, –7(multiplicity of 2)

b. 4, 2(multiplicity of 5), -3

24. Given $g(x) = 3x^3 - 8x^2 + 3x + 2$, use the rational root theorem to determine which of the following are ***possible zeros*** of the function.

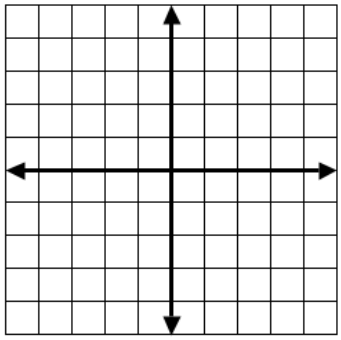
a. 2 b. -3 c. 4 d. $-\frac{2}{3}$ e. $\frac{3}{4}$

For the following functions, find the zeros, state the end behavior using limit notation, and graph the function.

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

zeros:

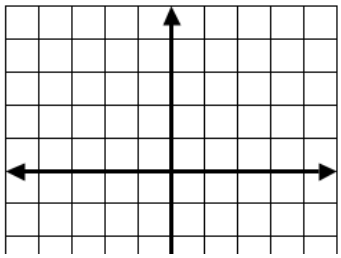
End Behavior:



26. $h(x) = x(x+3)^2(x-2)^3$

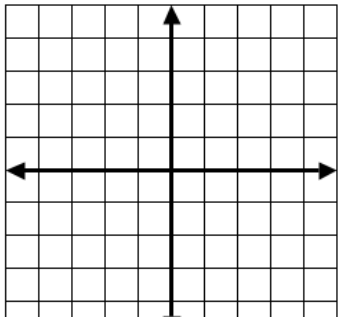
zeros:

End Behavior:



27. $f(x) = 3x^3 - 8x^2 + 3x + 2$

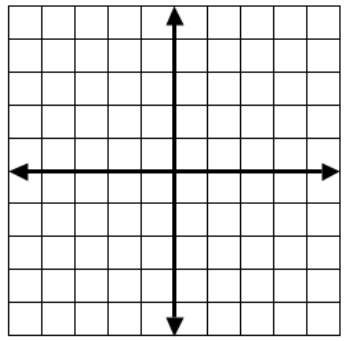
zeros:



End Behavior:

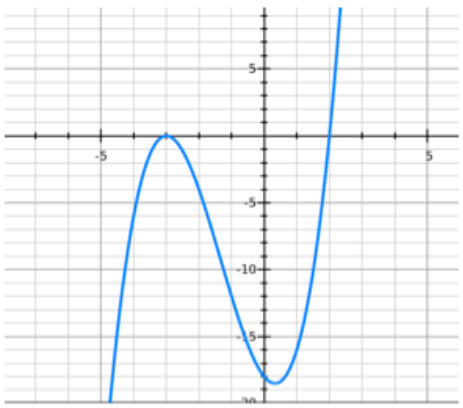
28. $g(x) = x^4 - 17x^2 + 16$

zeros:
End Behavior:



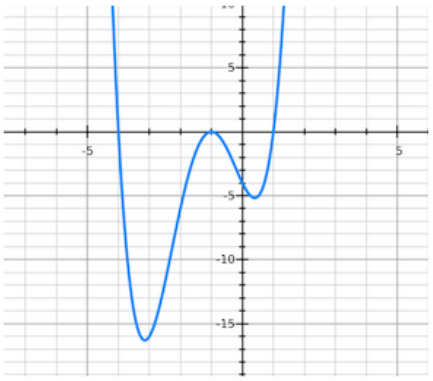
Given the following graphs analyze the functions

29.



Domain:
Range:
Increasing:
Decreasing:
#/type max:
#/type min:
x-intercept(s):
y-intercept:
End Behavior:

30.



Domain:
Range:
Increasing:
Decreasing:
#/type max:
#/type min:
x-intercept(s):
y-intercept:
End Behavior:

Use your graphing calculator to determine the intervals where the function values are: a) zero, b) positive and c) negative.

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

32. $h(x) = 2x^3 + 13x^2 + 16x + 5$