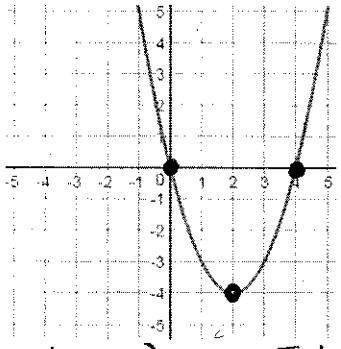
Informal Algebra 2 Unit 3 Test 1 Review Name_____

Find the Domain & Range, Minimums/Maximums (Absolute and/or Relative), X- & Y-Intercepts, Degree (even or odd), LC (positive or negative), the Intervals of Increase/Decrease, & End Behavior of each graph.

1.



Domain: $(-\infty, \infty)$ Range: $[-4, \infty)$

Abs. Max: none Abs. Min: $(2, -4)$

Rel. Max: none Rel. Min: none

X-intercept(s): $(0,0)$ $(4,0)$

Y-intercept: $(0,0)$

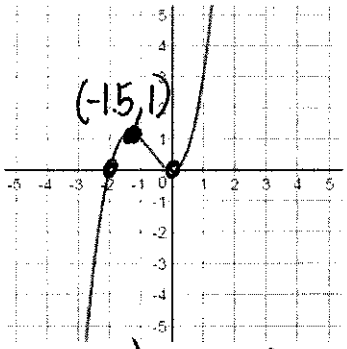
Degree: even LC: +

Int. of Increase: $(2, \infty)$

Int. of Decrease: $(-\infty, 2)$

End Behavior: $X \to -\infty, f(X) \to \infty$
$X \to \infty, f(X) \to \infty$

2.



Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$

Abs. Max: none Abs. Min: none

Rel. Max: $(-1.5, 1)$ Rel. Min: _____

X-intercept(s): $(-2,0)$ $(0,0)$

Y-intercept: $(0,0)$

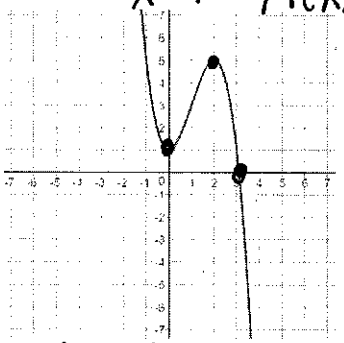
Degree: odd LC: +

Int. of Increase: $(-\infty, -1.5) \cup (0, \infty)$

Int. of Decrease: $(-1.5, 0)$

End Behavior: $X \to -\infty, f(X) \to -\infty$
$X \to \infty, f(X) \to \infty$

3.



Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$

Abs. Max: none Abs. Min: none

Rel. Max: $(2, 5)$ Rel. Min: none

X-intercept(s): $(3,0)$

Y-intercept: $(0,1)$

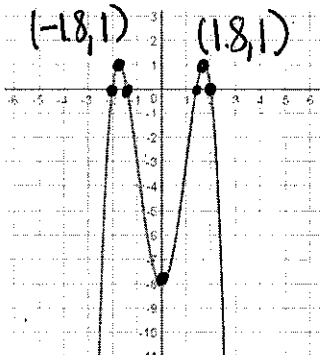
Degree: odd LC: −

Int. of Increase: $(0, 2)$

Int. of Decrease: $(-\infty, 0) \cup (2, \infty)$

End Behavior: $X \to -\infty, f(X) \to \infty$
$X \to \infty, f(X) \to -\infty$

4.



Domain: $(-\infty, \infty)$ Range: $(-\infty, 1]$

Abs. Max: $(-1.8, 1)$ $(1.8, 1)$ Abs. Min: none

Rel. Max: none Rel. Min: $(0, -8)$

X-intercept(s): $(-2,0)$ $(-1.5,0)$ $(1.5,0)$ $(2,0)$

Y-intercept: $(0, -8)$

Degree: even LC: −

Int. of Increase: $(-\infty, -1.8) \cup (0, 1.8)$

Int. of Decrease: $(-1.8, 0) \cup (1.8, \infty)$

End Behavior: $X \to -\infty, f(X) \to -\infty$
$X \to \infty, f(X) \to -\infty$

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State the degree (even/odd), LC (positive/negative), maximum number of turns in the graph of the function & the end behavior of each function.

5. $f(x) = -2x^4 + 3x^3 - 2x + 5$

Degree: even LC: −

Max # Turns: 3

End Behavior: $x \to -\infty, f(x) \to -\infty$
$x \to \infty, f(x) \to -\infty$

6. $g(x) = 5x^8 - 4x^2 + 1$

Degree: even LC: +

Max # Turns: 7

End Behavior: $x \to -\infty, f(x) \to \infty$
$x \to \infty, f(x) \to \infty$

7. $h(x) = 2x^7 + 4x^2 + 2x - 3$

Degree: odd LC: +

Max # Turns: 10

End Behavior: $x \to -\infty, f(x) \to -\infty$
$x \to \infty, f(x) \to \infty$

Determine the degree (even/odd) and LC (positive/negative), end behavior (make sure you know how to write it out) and x- and y- intercepts of each function. SHOW ALL WORK!!!

8. $f(x) = x^2 + 10x + 21$

Degree: even LC: +

End behavior: As $x \to -\infty, f(x) \to \infty$

As $x \to \infty, f(x) \to \infty$

y-intercept: (0, 21)

x-intercepts: (−3, 0) (−7, 0)

SHOW WORK HERE:

$m = 21 \mid A = 10$

7 | 7
3 | 3

$(x^2 + 7x + 3x + 21) = 0$

$x(x+7) + 3(x+7) = 0$

$(x+3)(x+7) = 0$

$x + 3 = 0$
$-3 \quad -3$
$x = -3$

$x + 7 = 0$
$-7 \quad -7$
$x = -7$

9. $f(x) = 2x^3 + 8x^2 - 10x - 40$

Degree: odd LC: +

End behavior: $x \to -\infty, f(x) \to -\infty$
$x \to \infty, f(x) \to \infty$

y-intercept: (0, −40)

x-intercepts: (−4, 0)
$(\sqrt{5}, 0)$
$(-\sqrt{5}, 0)$

SHOW WORK HERE:

$(2x^3 + 8x^2)(-10x - 40) = 0$

$2x^2(x+4) - 10(x+4) = 0$

$(2x^2 - 10)(x+4) = 0$

$2x^2 - 10 = 0$
$+10 \quad +10$
$\frac{2x^2}{2} = \frac{10}{2}$

$x^2 = 5$

$x = \pm\sqrt{5}$

$x + 4 = 0$
$-4 \quad -4$
$x = -4$

10. $f(x) = -4x - 7$

Degree: odd LC: −

End behavior: $x \to -\infty, f(x) \to \infty$
$x \to \infty, f(x) \to -\infty$

y-intercept: (0, −7)

x-intercept(s): $\left(-\frac{7}{4}, 0\right)$

SHOW WORK HERE:

$-4x - 7 = 0$
$+7 \quad +7$
$\frac{-4x}{-4} = \frac{7}{-4}$

$x = -\frac{7}{4}$

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State the degree (the #), LC (positive/negative) and end behaviors of the graphs. Sketch the graph without a calculator.

11. $f(x) = -(x+1)^1(x-3)^4$

Degree: odd LC: −

Max # of turns: 4

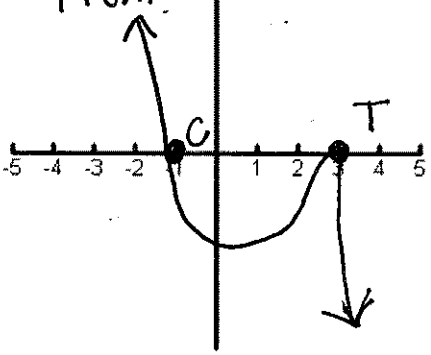
Zeros and their multiplicity

(−1, 0) cross (m=1)

(3, 0) touch (m=4)

End Behavior: $X \to -\infty, f(X) \to \infty$

$X \to \infty, f(X) \to \infty$



12. $g(x) = x^1(x+2)^2(x-4)^2$

Degree: odd LC: +

Max # of turns: 4

Zeros and their multiplicity

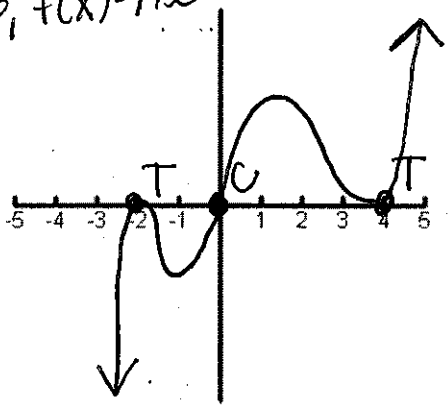
(0, 0) cross (m=1)

(−2, 0) touch (m=2)

(4, 0) touch (m=2)

End Behavior: $X \to -\infty, f(X) \to -\infty$

$X \to \infty, f(X) \to \infty$



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

Degree: odd LC: +

Max # of turns: 2

Zeros and their multiplicity

(4, 0) cross (m=1)

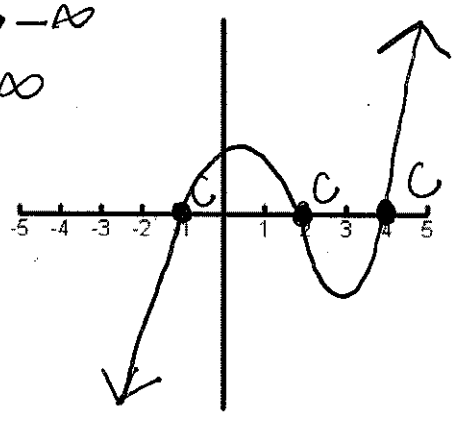
(−1, 0) cross (m=1)

(2, 0) cross (m=1)

End Behavior:

$X \to -\infty, f(X) \to -\infty$

$X \to \infty, f(X) \to \infty$



14. $f(x) = -x^1(x-4)^1(x-2)^2$

Degree: even LC: −

Max # of turns: 3

Zeros and their multiplicity

(0, 0) cross (m=1)

(4, 0) cross (m=1)

(2, 0) touch (m=2)

End Behavior:

$X \to -\infty, f(X) \to -\infty$

$X \to \infty, f(X) \to -\infty$