

Honors Algebra 2
For use after 6.8

For the following list:

1. Domain 2. Range 3. Interval $y \geq 0$ 4. Interval $y > 0$ 5. Interval $y \leq 0$ 6. Interval $y < 0$
7. Zeros 8. Y-intercept 9. Interval increasing 10. Interval decreasing 11. Interval concave up 12. Interval concave down 13. boundedness 14. Continuous? 15. One to one? 16. Local/Absolute maxs 17. Local/Absolute mins 18. End behavior

1. $f(x) = -2(x+1) + 8$ 2. $g(x) = \frac{1}{2}|x-4| - 5$ 3. $h(x) = -2(3-2x)^2 + 32$
4. $j(x) = (x-3)(x+1)^2$ 5. $p(x) = x(x-5)^3(x+3)^2$ 6. $q(x) = -8(x+7)^3 - 1$

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1. $f(x) = -2(x+1) + 8$



$$-8 = -2(x+1)$$

$$4 = x+1$$

$$3 = x$$

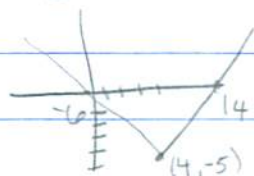
1. \mathbb{R} 2. \mathbb{R} 3. $(-\infty, 3]$ 4. $(-\infty, 3)$ 5. $[3, \infty)$

6. $(3, \infty)$ 7. $(3, 0)$ 8. $(0, 6)$ 9. \emptyset 10. \mathbb{R}

11. \emptyset 12. \emptyset 13. \emptyset 14. Yes 15. Yes 16. None

17. None 18. $x \rightarrow \infty, f(x) \rightarrow -\infty$ $x \rightarrow -\infty, f(x) \rightarrow \infty$

2. $g(x) = \frac{1}{2}|x-4| - 5$



$$5 = \frac{1}{2}|x-4|$$

$$10 = |x-4|$$

$$x-4=10 \text{ OR } x-4=-10$$

$$x=14 \text{ OR } x=-6$$

$$g(x) = \frac{1}{2}(4) - 5 = 2 - 5 = -3$$

1. \mathbb{R} 2. $[-5, \infty)$ 3. $(-\infty, -6] \cup [14, \infty)$ 4. $(-\infty, -6) \cup$

$(14, \infty)$ 5. $[-6, 14]$ 6. $(-6, 14)$ 7. $(-6, 0) \cup (14, 0)$

8. $(0, -3)$ 9. $(4, \infty)$ 10. $(-\infty, 4)$ 11. \emptyset 12. \emptyset

13. Below 14. Yes 15. No 16. None

17. Local/Abs min of -5 @ $x=4$ 18. $x \rightarrow \infty, g(x) \rightarrow \infty$
 $x \rightarrow -\infty, g(x) \rightarrow \infty$

3. $h(x) = -2(3-2x)^2 + 32$

$$h(x) = -2(-2(x-3/2))^2 + 32$$



$$-32 = -2(3-2x)^2$$

$$16 = (3-2x)^2$$

$$4 = |3-2x|$$

$$3-2x=4 \quad -2x=1 \quad x=-1/2$$

$$3-2x=-4 \quad -2x=-7 \quad x=7/2$$

1. \mathbb{R} 2. $(-\infty, 32]$ 3. $[-\frac{1}{2}, \frac{7}{2}]$ 4. $(-\frac{1}{2}, \frac{7}{2})$

5. $(-\infty, -1/2] \cup [7/2, \infty)$ 6. $(-\infty, -1/2) \cup (7/2, \infty)$

7. $(-1/2, 0) \cup (7/2, 0)$ 8. $(0, 24)$ 9. $(-\infty, 3/2)$

10. $(3/2, \infty)$ 11. \emptyset 12. \mathbb{R} 13. Above

14. Yes 15. No 16. Local + Abs Max

of 32 @ $x=3/2$ 17. None

18. $x \rightarrow \infty, h(x) \rightarrow -\infty$

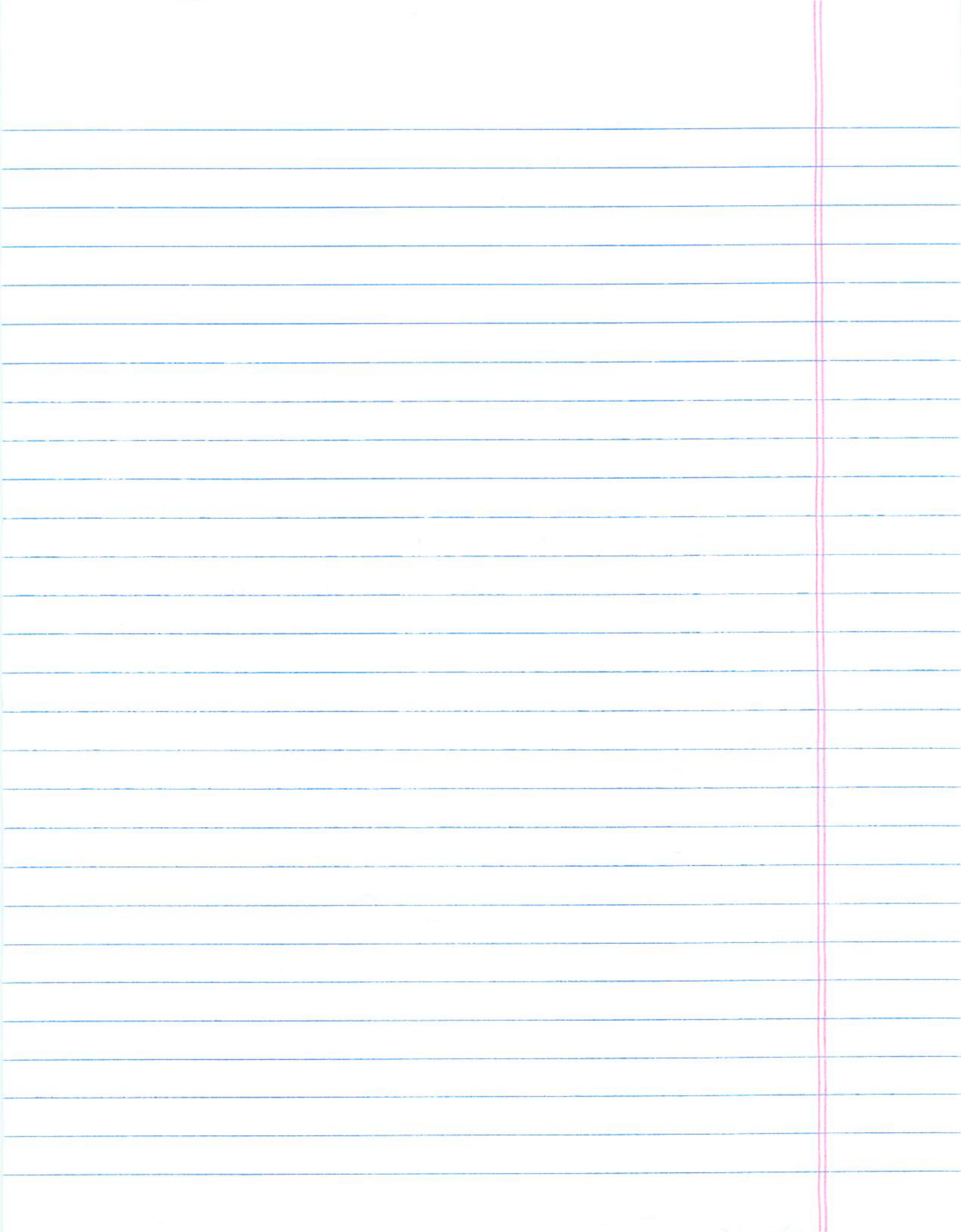
$x \rightarrow -\infty, h(x) \rightarrow -\infty$

$$h(x) = -2(3)^2 + 32$$

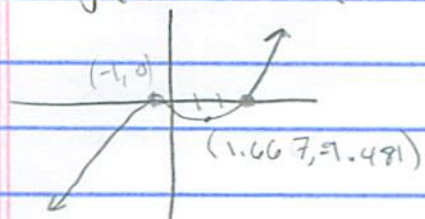
$$-18 + 32$$

$$24$$

$$\frac{32}{-18} = \frac{24}{24}$$



4. $j(x) = (x-3)(x+1)^2$ 1. R 2. R 3. $-1 \cup [3, \infty)$ 4. $(3, \infty)$ 5. $(-\infty, 3]$



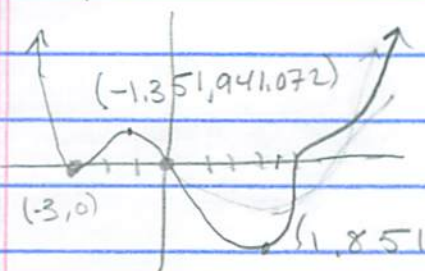
6. $(-\infty, -1) \cup (-1, 3)$ 7. $(-1, 0) \cup (3, 0)$
 8. $(0, -3)$ 9. $(-\infty, -1) \cup (1.666, \infty)$
 10. $(-1, 1.666)$ 11. $(0, \infty)$ 12. $(-\infty, 0)$
 13. None 14. Yes 15. No 16. Local Max of 0 @ $x = -1$ 17. Local Min of -9.481 @ $x = 1.667$
 18. $x \rightarrow \infty j(x) \rightarrow \infty$ $x \rightarrow -\infty j(x) \rightarrow -\infty$

5. $p(x) = x(x-5)^3(x+3)^2$ 1. R 2. $[-1360.15, \infty)$ 3. $(-\infty, 0] \cup [5, \infty)$

Make window

$x[-10, 10]$

$y[-2000, 2000]$

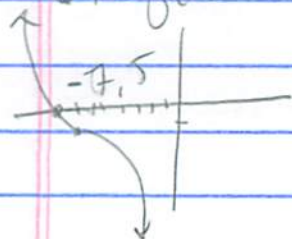


4. $(-\infty, -3) \cup (-3, 0) \cup (5, \infty)$
 5. $-3 \cup [0, 5]$ 6. $(0, 5)$ 7. $(-3, 0)$
 $(0, 0) \cup (5, 0)$ 8. $(0, 0)$ 9. $(-3, -1.351) \cup (1.851, \infty)$
 10. $(-\infty, -3) \cup (-1.351, 1.851)$
 11. $(-\infty, -2) \cup (0, -4) \cup (6, \infty)$

12. $(-2, 0) \cup (-4, 6)$ 13. Below 14. yes
 15. No 16. Local max of 941.072 @ $x = -1.351$
 17. Local min of 0 @ $x = -3$, Local & Abs min of -1360.15 @ $x = 1.851$

18. $x \rightarrow \infty p(x) \rightarrow \infty$ $x \rightarrow -\infty p(x) \rightarrow \infty$

6. $g(x) = -8(x+7)^3 - 1$ 1. R 2. R 3. $(-\infty, -7.5]$ 4. $(-\infty, -7.5)$



- $0 = -8(x+7)^3 - 1$ 5. $[-7.5, \infty)$ 6. $(-7.5, \infty)$ 7. $(-7.5, 0)$
 $-\frac{1}{8} = (x+7)^3$ 8. $(0, -2745)$ 9. \emptyset 10. $(-\infty, \infty)$
 $-\frac{1}{2} = x+7$ 11. $(-\infty, -7)$ 12. $(-7, \infty)$ 13. None
 $7.5 = x$ 14. Yes 15. Yes 16. None

~~17. None~~

17. None 18. $x \rightarrow \infty g(x) \rightarrow -\infty$
 $x \rightarrow -\infty g(x) \rightarrow \infty$

