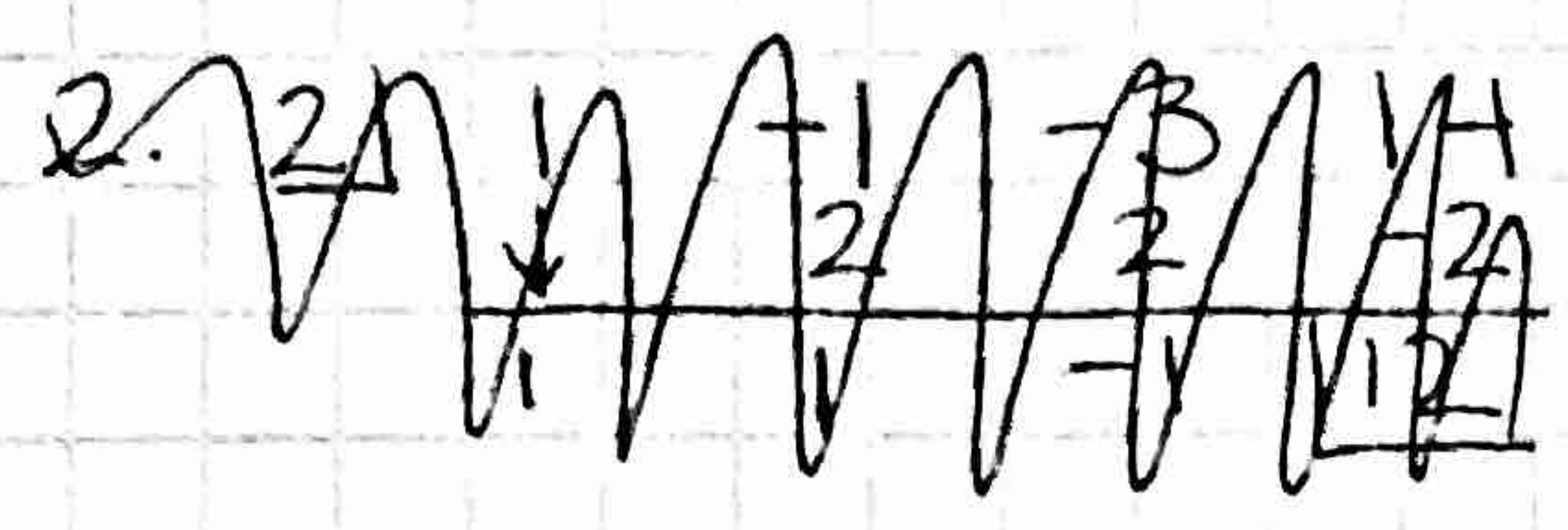


HW 3

$$1. \begin{array}{r|rrrr} -5 & 2 & 3 & -39 & -20 \\ & \downarrow & -10 & 35 & 20 \\ \hline & 2 & -7 & -4 & \boxed{0} \end{array}$$

$$2x^2 - 7x - 4$$



$$x^2 + x^2$$

$$2. \begin{array}{r|rrrrr} 2 & 1 & -1 & 0 & -3 & 14 \\ & \downarrow & 2 & 2 & 4 & 2 \\ \hline & 1 & 1 & 2 & -1 & \boxed{16} \end{array}$$

$$\boxed{x^3 + x^2 + 2x + 1 + \frac{16}{x-2}}$$

$$3. \begin{array}{r} 3x^2 + 14x + 20 \\ x^2 - 2x + 3 \overline{) 3x^4 + 8x^3 + 1x^2 + 7x - 6} \\ \underline{- 3x^4 - 6x^3 + 9x^2} \\ 14x^3 - 8x^2 + 7x - 6 \\ \underline{- 14x^3 - 28x^2 + 42x} \\ 20x^2 - 35x - 6 \\ \underline{- 20x^2 - 40x + 60} \\ 5x - 66 \end{array}$$

$$\boxed{3x^2 + 14x + 20 + \frac{5x - 66}{x^2 - 2x + 3}}$$

$$4. \begin{aligned} -37 &= a(-8+5)^2 - 1 \\ -30 &= a(-3)^2 \\ -30 &= 9a \\ -4 &= a \end{aligned}$$

$$y = -4(x+5)^2 - 1$$

$$y = -4(x^2 + 10x + 25) - 1$$

$$\boxed{y = -4x^2 - 40x - 101}$$

5. $x = 7$

6. $x = -b/2a = 8/2(-1)$

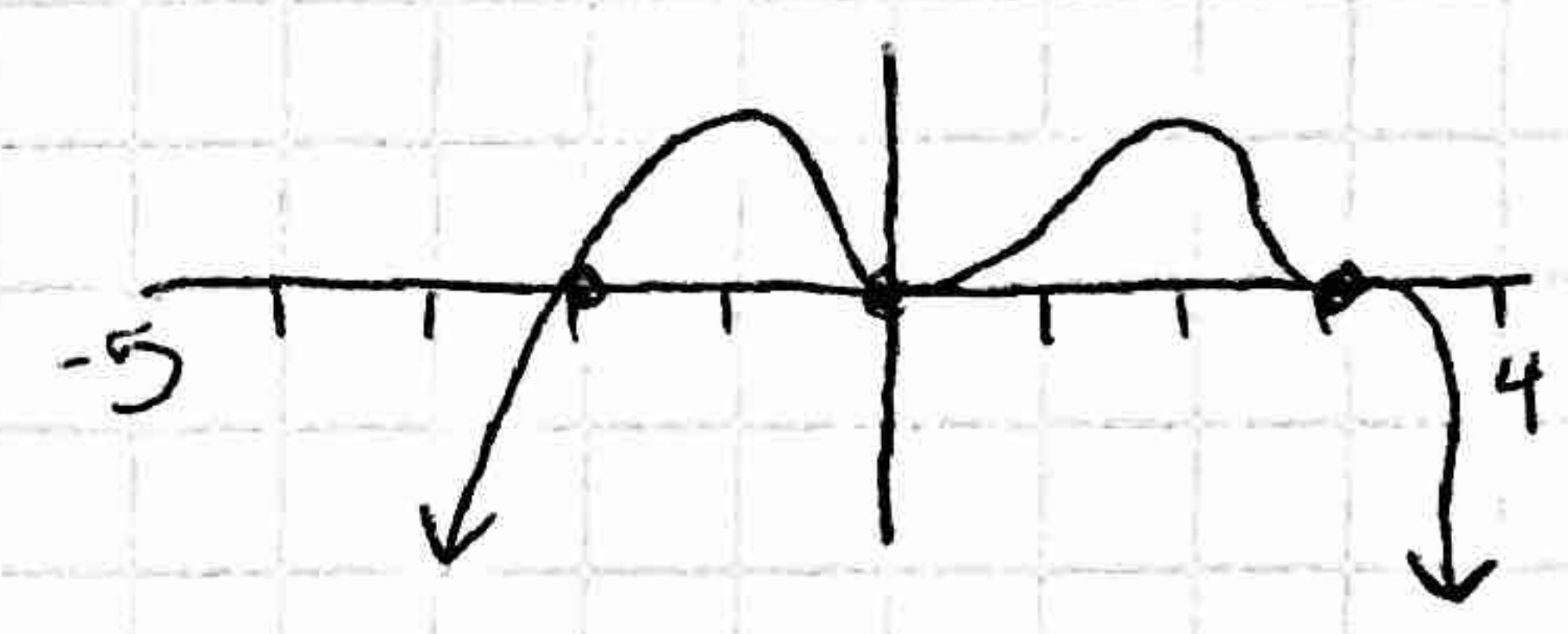
$x = -4$

7. LC: -3
D: 0

8. $f(x) = 2x^2(x^2 - 7x + 10)$
 $= 2x^2(x-5)(x-2)$

$x = 0(2) \quad x = 5(1) \quad x = 2(1)$

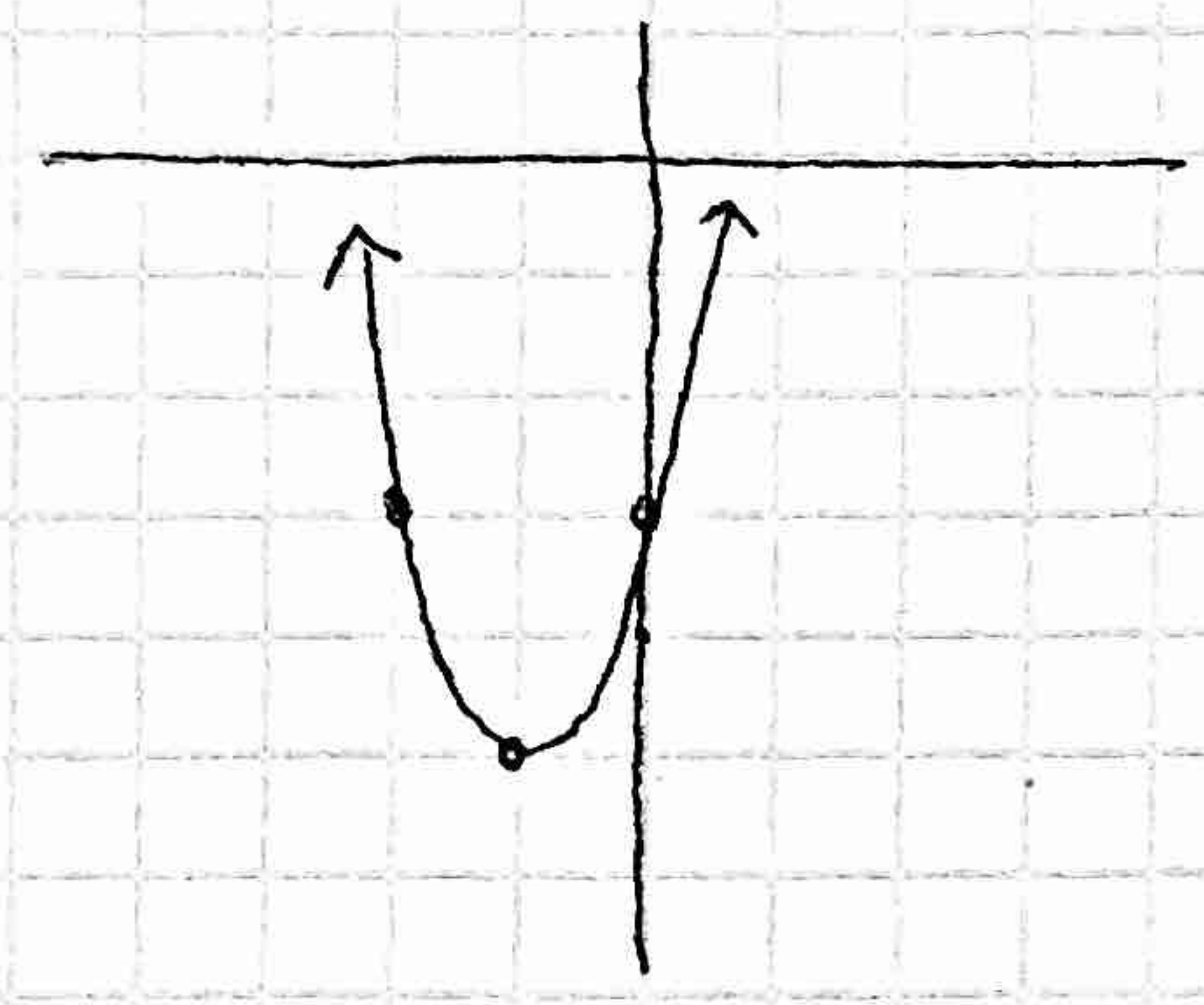
9. $x = 0(2) \quad LC: -1$
 $x = -2(1) \quad D: 0$
 $x = 3(3)$



10. answers will vary.

$$f(x) = -4(x)(x-5)(x+7)$$

11. VD 2, LI, D5



$$12. P. Z. = \pm \left(\frac{1, 2, 5, 6, 15, 30}{1, 2, 4} \right)$$

$$= \pm 1, \pm 2, \pm 5, \pm 6, \pm 15, \pm 30, \pm 5/2, \pm 15/2, \pm 1/4, \pm 5/4, \pm 3/2, \pm 15/4$$

$$13. \begin{array}{r|rrrrr} 7 & 1 & -3 & 2 & -6 & -5 \\ & \downarrow & 7 & 28 & 210 & 1428 \\ \hline & 1 & 4 & 30 & 204 & 1423 \end{array}$$

$$f(7) = 1, 423$$

$$14. \begin{array}{r|rrrrr} -5 & 2 & 5 & -30 & -41 & 70 \\ & \downarrow & -10 & 25 & 55 & -70 \\ \hline & 2 & -5 & -11 & 14 & 0 \end{array}$$

$$17. a) x=0, x=2, x=-1$$

$$b) (x+9)(x-2) \\ x=-9, x=2$$

$$\begin{array}{r|rrrr} -2 & 2 & -5 & -11 & 14 \\ & \downarrow & -4 & 18 & -14 \\ \hline & 2 & -9 & 7 & 0 \end{array}$$

$$18. 43 = a(x-3)^2 + 7 \\ 43 - 7 = 9a \\ 36 = 9a \\ 4 = a$$

$$(x+5)(x+2)(2x^2-9x+7) \\ (x+5)(x+2)(2x-7)(x-1)$$

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

$$y = 4(x^2 - 6x + 9) + 7 \\ y = 4x^2 - 24x + 43$$

$$15. \text{ from calc. } x = -3, x = 4$$

$$\begin{array}{r|rrrrr} -3 & 1 & -1 & 13 & -25 & -300 \\ & \downarrow & -3 & 12 & -75 & 300 \\ \hline & 1 & -4 & 25 & -100 & 0 \end{array} \checkmark$$

$$19. x = \frac{-702}{2(-3)} = 127 \text{ walks}$$

$$-3(127)^2 + 702(127) - 40 \\ = 348,247$$

$$\begin{array}{r|rrrr} 4 & 1 & -4 & 25 & -100 \\ & \downarrow & 4 & 0 & 100 \\ \hline & 1 & 0 & 25 & 0 \end{array} \checkmark$$

$$(x+3)(x-4)(x^2+25) \\ x = -3, x = 4, x = \pm 5i$$

$$20. v: x = \frac{4}{2}(1) = 2 \\ (2)^2 - 4(2) - 60 \\ 4 - 8 - 60 = -64$$

$$v: (2, -64)$$

$$x\text{-int: } (x-10)(x+10) \quad x=10, -10$$

$$16. \begin{array}{r|rrrr} -1 & 1 & 4 & -1 & -4 \\ & \downarrow & -1 & -3 & 4 \\ \hline & 1 & 3 & -4 & 0 \end{array}$$

$$21. a) -5 = a(0-4)^2 + 3 \\ -8 = 16a \\ -1/2 = a$$

$$y = -1/2(x-4)^2 + 3$$

$$b) y = 3(x)^2 - 4$$

$$(x+1)(x^2+3x-4) \\ (x+1)(x+4)(x-1)$$