Honors Math II
Mid chapter 4 Review WS

Name Key
Period_____ Date_____

Factor completely.

1. $9x^3 + 24x^2 - 20x$

1·9
3·3

1·20
2·10
4·5

$x(9x^2+24x-20)$

$x(3x+10)(3x-2)$

2. $48n^2 - 474n - 60$

$6(8n^2-79-10)$

$6(8n+1)(n-10)$

3. $9x^2 - 48x + 64$

$(3x-8)(3x-8)$

$(3x-8)^2$

4. $9m^3 + 3m^2$

$3m^2(3m+1)$

5. $8x^2 + 6x - 9$

$(4x-3)(2x+3)$

6. $18n^4 - 12n^3$

$6n^3(3n-2)$

7. $10x^3 - 9x^2 - 9x$

1·10
2·5

1·9
3·3

$x(10x^2-9x-9)$

$x(2x-3)(5x+3)$

8. $4x^2 - 25y^2$

$(2x+5y)(2x-5y)$

9. $9x^3 - x$

$x(9x^2-1)$

$x(3x+1)(3x-1)$

10. $4x^2 + 121$

$(2x+11i)(2x-11i)$

Solve for x. Find the sum of the solutions.

11. $4x^2 - 8x = 0$

$4x(x-2)=0$

$x=0 \quad x=2$

$\boxed{\text{sum} = 2}$

12. $x^2 + 25 = 0$

$(x+5i)(x-5i)=0$

$x=-5i, 5i$

$\boxed{\text{Sum} = 0}$

Solve for x.

13. $9x^2 - 36 = 0$

$9(x^2-4)=0$

$9(x+2)(x-2)=0$

$x=-2, 2$

14. $16x^2 + 72x = -81$

$16x^2+72x+81=0$

$(4x+9)(4x+9)=0$

$x=-\frac{9}{4}$

15. $15x^2 + 7x = 2$

$15x^2+7x-2=0$

$(5x-1)(3x+2)=0$

$x=1/5, -2/3$

16. $6x^3 - 7x^2 - 5x = 0$

$x(6x^2-7x-5)=0$

$x(3x-5)(2x+1)=0$

$x=0, 5/3, -1/2$

Solve for x.

17. $(3x + 2)^2 - 49 = 0$

$(3x+2)^2=49$

$3x+2=\pm\sqrt{49}$

$3x+2=\pm 7$

$3x=-2\pm 7$

$x=\frac{-2\pm 7}{3}$

$x=-3, 5/3$

18. $2(x + 2)^2 - 72 = 0$

$2(x+2)^2=72$

$(x+2)^2=36$

$x+2=\pm 6$

$x=-2\pm 6$

$x=4, -8$

19. $3(x + 2)^2 = 18$

$(x+2)^2=6$

$x+2=\pm\sqrt{6}$

$x=-2\pm\sqrt{6}$

20. $\frac{2}{3}(x + 8)^2 - 66 = 0$

$\frac{2}{3}(x+8)^2=66$

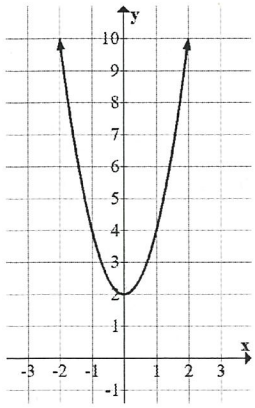
$(x+8)^2=99$

$x=-8\pm\sqrt{99}$

$x=-8\pm 3\sqrt{11}$

Write the equation for the following graphs. (Find "a")

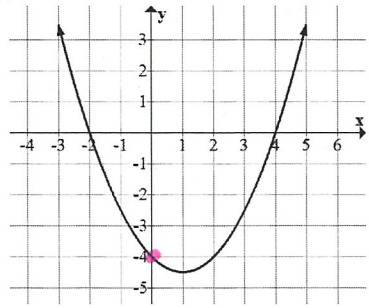
21.



stretch by 2

$y=2x^2+2$

22.



$y=a(x+2)(x-4)$

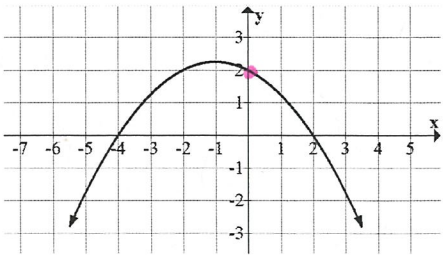
$-4=a(2)(-4)$

$-4=-8a$

$a=1/2$

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

23.



$y=a(x+4)(x-2)$

$2=a(4)(-2)$

$2=-8a$

$a=-1/4$

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

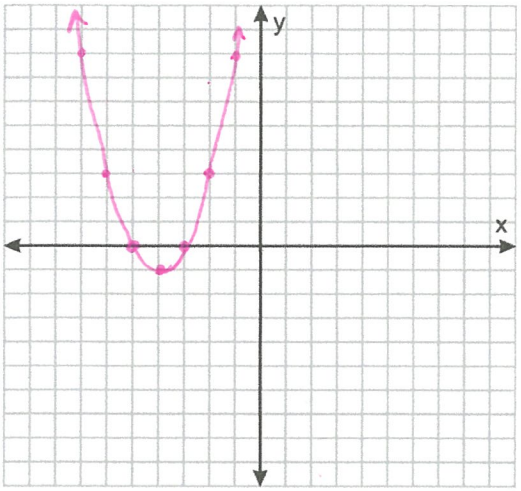
Graph the following equations.

24. $f(x) = x^2 + 8x + 15$

$(x+3)(x+5)$

x-intercept(s): $(-3,0)$ $(-5,0)$

y-intercept: $(0,15)$

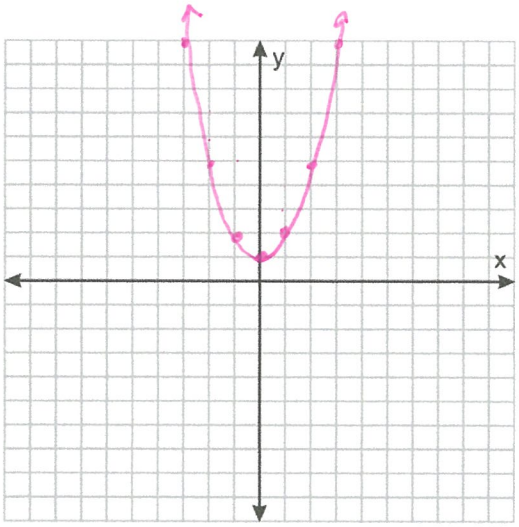


V: $(-4,-1)$

25. $g(x) = x^2 + 1$

x-intercept(s): None

y-intercept: $(0,1)$

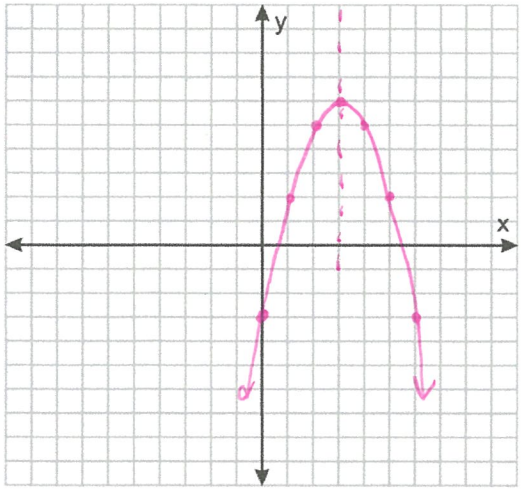


V: $(0,1)$

26. $f(x) = -(x-3)^2 + 6$

V: $(3,6)$

Write the end behavior and interval of increase and decrease.



end behavior

$x \to -\infty$ $y \to -\infty$

$x \to \infty$ $y \to -\infty$

increase: $(-\infty, 3)$

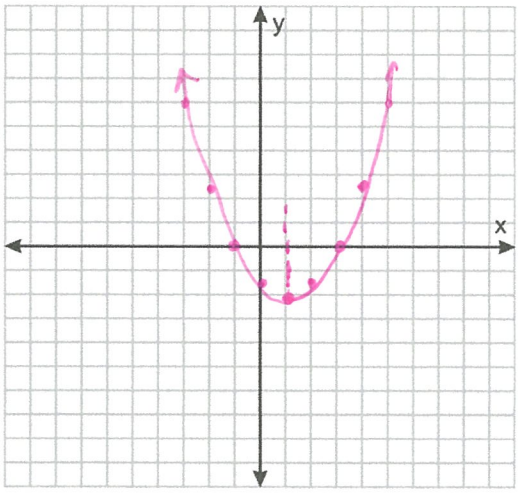
decrease: $(3, \infty)$

27. $f(x) = \frac{1}{2}(x+1)(x-3)$

$x=-1$ $x=3$

Vertex: $(1,-2)$

Max/Min: Min

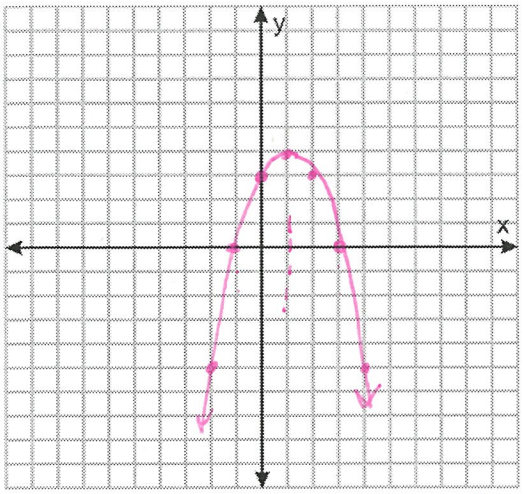


Graph the following equations.

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

x-intercept(s): (3,0) (-1,0)

y-intercept: (0,3)



$-(x^2-2x-3)$ V: (1,4)

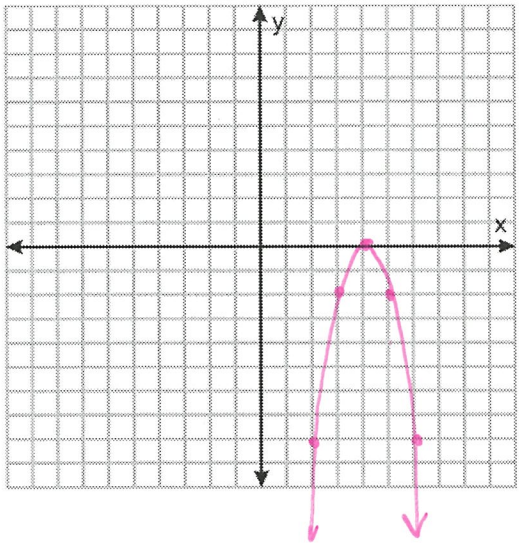
$-(x-3)(x+1)$

$x = 3, -1$

29. $g(x) = -2(x-4)^2$

x-intercept(s): (4,0)

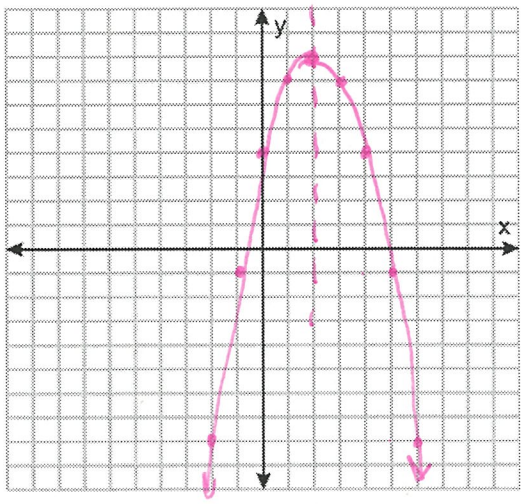
y-intercept: (0,-32)



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

V: (2,8)

Write the end behavior and interval of increase and decrease.



end behavior

$x \to -\infty$ $y \to -\infty$

$x \to \infty$ $y \to -\infty$

increase:

$(-\infty, 2)$

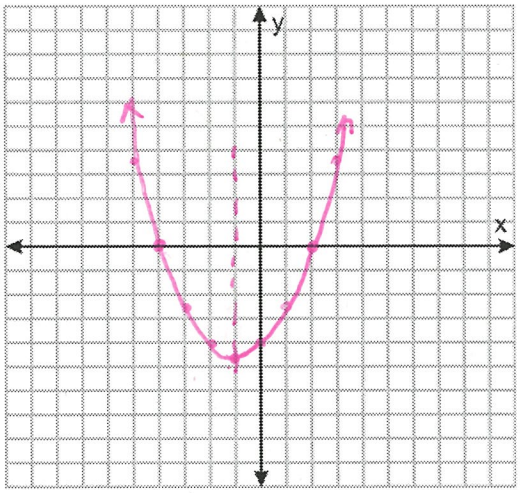
$(2, \infty)$

31. $f(x) = \frac{1}{2}(x+4)(x-2)$

x=-4 x=2

Vertex: (-1,-4.5)

Max/Min: MIN



Write the quadratic equation in standard form for the given information. (Find "a")

32. $(-6, 0), (2, 0), (0, -16)$

$y = a(x+6)(x-2)$

$-16 = a(0+6)(0-2)$

$-16 = -12a$

$a = \frac{-16}{-12} = \frac{4}{3}$

$y = 4/3(x+6)(x-2)$

$y = 4/3(x^2+4x-12)$

$y = 4/3x^2 + 16/3x - 16$

33. $(2, 0), (-2, 0), (0, 6)$

$y = a(x-2)(x+2)$

$6 = a(0-2)(0+2)$

$6 = -4a$

$a = \frac{6}{-4} = -\frac{3}{2}$

$y = -\frac{3}{2}(x+2)(x-2)$

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

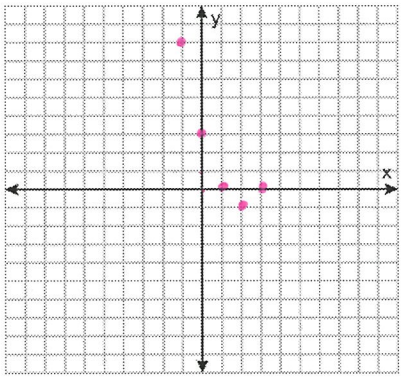
$y = -\frac{3}{2}x^2 + 6$

Write the quadratic equation for the given information. (Find "a")

34. $a = 1$

x	y
−1	8
0	3
1	0
2	−1
3	0

vertex

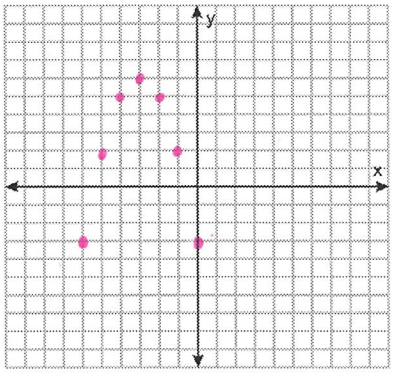


$y = (x-2)^2 - 1$ or $y = (x-1)(x-3)$

35. $a = -1$

x	y
−6	−3
−5	2
−3	6
−1	2
0	−3

vertex



$y = -(x+3)^2 + 6$

36. Write the equation in standard form for the quadratic equation with the given zeros and a leading coefficient of $\frac{1}{2}$. Zeros: $x = 2, x = -6$

$a = 1/2$

$y = 1/2(x-2)(x+6)$

$y = 1/2(x^2+4x-12)$

$y = 1/2x^2 + 2x - 6$

37. Write the equation in standard form for the quadratic equation with the given zeros and a leading coefficient of -2. Zeros: $x = -1, x = -8$

$a = -2$

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

$y = -2(x^2+9x+8)$

$y = -2x^2 - 18x - 16$

38. Write the equation in intercept form for the quadratic equation with the given zeros and a leading coefficient of -3. Zeros: $x = 1, x = 4$

$a = -3$

$y = -3(x-1)(x-4)$

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

$y = -3x^2 + 15x - 12$