Honors Math II
Unit 4 day 3

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Name Key
Period_____ Date_____

**Simplify the expression.**

1. $\sqrt{56}$

$2\sqrt{14}$

2. $5\sqrt{24} \cdot 2\sqrt{28}$

$40\sqrt{42}$

3. $\frac{-6}{5-\sqrt{11}}$

$\frac{-15-3\sqrt{11}}{7}$

**Solve the equation.**

4. $x^2 - 289 = 0$

$x = \pm 17$

5. $\frac{1}{2}x^2 - 8 = 16$

$x = \pm 4\sqrt{3}$

6. $2x^2 + 5 = 5x^2 - 37$

$x = \pm\sqrt{14}$

7. $2(x+2)^2 - 72 = 0$

$x = 4, -8$

8. $(3x+2)^2 - 49 = 0$

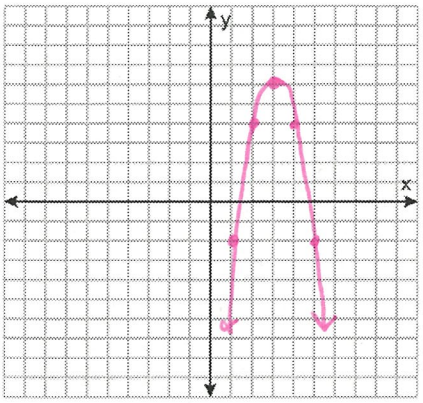
$x = \frac{5}{3}, -3$

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

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

**Graph:**

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




V: (3,6)

x - intercept(s):

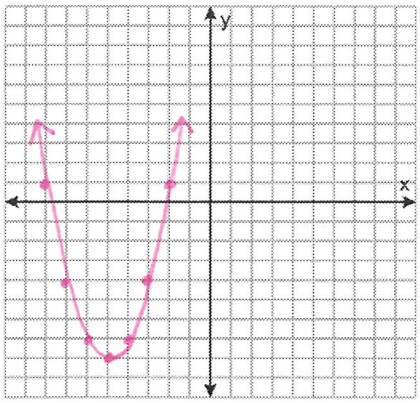
$(3 \pm \sqrt{3}, 0)$

y - intercept:

(0,-12)

11. $y = (x+5)^2 - 8$

V: (-5,-8)



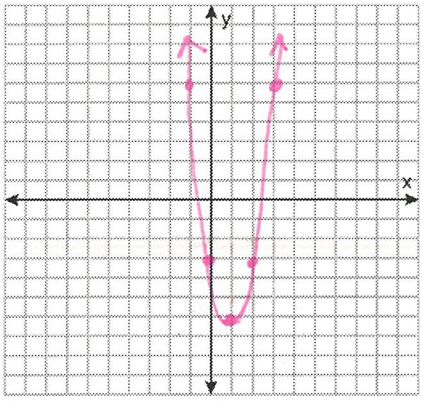

x - intercept(s):

$(-5 \pm 2\sqrt{2}, 0)$

y - intercept:

(0,17)

12. $y = 3(x-1)^2 - 6$




V: (1,-6)

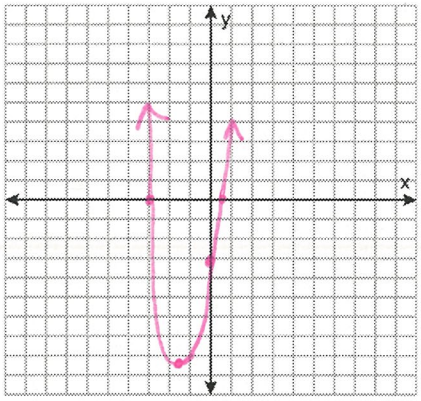
x - intercept(s):

$(1 \pm \sqrt{2}, 0)$

y - intercept:

(0,-3)

13. $y = 3x^2 + 8x - 3$




V: $(-\frac{4}{3}, -\frac{25}{3})$

x - intercept(s):

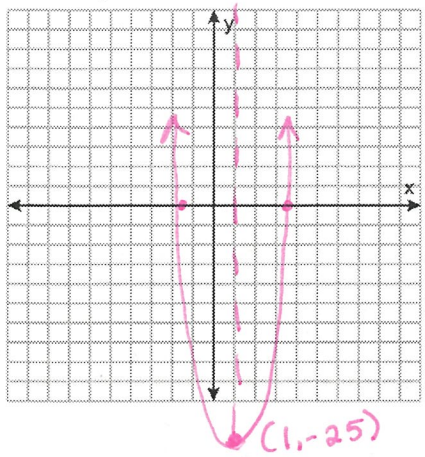
$(1/3, 0)$ $(-3, 0)$

y - intercept:

(0,-3)

14. $y = 4x^2 - 8x - 21$

Not to scale




V: (1,-25)

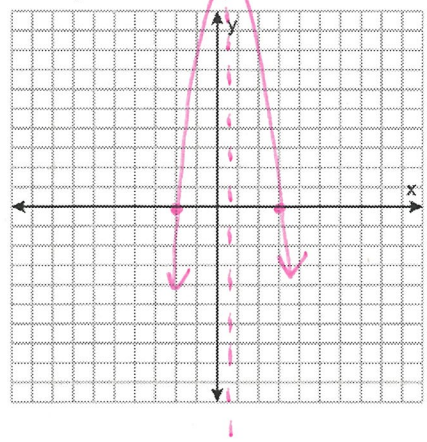
x - intercept(s):

(7/2,0) (-3/2,0)

y - intercept:

(0,-21)

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




V: (1/2, 25/2)

x - intercept(s):

(3,0) (-2,0)

y - intercept:

(0,12)

Without graphing, find the x-intercept(s) and y-intercept.

16. $y = \frac{1}{2}(x+1)^2 - 6$

x-int:
$(-1 \pm 2\sqrt{3}, 0)$

y-int:
(0,-5.5)

17. $y = -2(x-3)^2 + 10$

x-int: $(3 \pm \sqrt{5}, 0)$

y-int: (0,-8)

18. $y = x^2 - 11x + 24$

x-int: (8,0) (3,0)

y-int: (0,24)

19. $y = 2x^2 + 18x + 40$

x-int: (-4,0) (-5,0)

y-int: (0,40)

Write the expression as a complex number in standard form.

20. $(-4-i)-(4+5i)$

$-8-6i$

21. $(5-3i)+(-3-6i)$

$2-9i$

22. $(2-i)^2$

$3-4i$

23. $-2i(1+i)(2+3i)$

$10-2i$

24. $\frac{5}{3-2i}$

$\frac{15+10i}{13}$

Factor the following polynomials.

25. $15x^2-26x+8$

$(3x-4)(5x-2)$

26. $15x^2-2x-8$

$(3x+2)(5x-4)$

27. $x^2+9x+20$

$(x+4)(x+5)$

28. $x^2+64$

$(x+8i)(x-8i)$

29. $5x^2-14x-3$

$(5x+1)(x-3)$

30. $4x^2+121$

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

31. $x^2-10$

$(x+\sqrt{10})(x-\sqrt{10})$

32. $64x^2-81$

$(8x+9)(8x-9)$