Algebra 2A Chapter 4 Stations Review Name: _____ Date: _____ Period: _____

Chapter 4 Stations Answers

① GRAPHING QUADRATIC FUNCTIONS

1

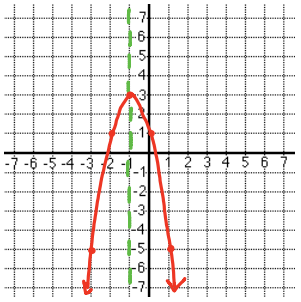
vertex: $(-1,3)$

y-int: $y = -2(1)^2+3$

$y = -2+3 = 1$

x | y

1 | $-2(2)^2+3 = -2(4)+3 = -5$



2

$y = \frac{1}{3}(x-5)(x+1)$ $y = \frac{1}{3}(-5)(1)$

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

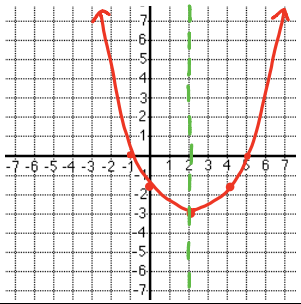
$\frac{1}{3}(2-5)(2+1)$ $(2,3)$

$\frac{1}{3}(-3)(3) = -3$

x | y

1 | $\frac{1}{3}(1-5)(1+1) = \frac{1}{3}(-4)(2)$

$= -\frac{8}{3} = -2\frac{2}{3}$



② SOLVING QUADRATICS

1

$x^2 - 12x - 14 = 0$

$x^2 - 12x + 36 = 14 + 36$

$(x-6)^2 = 50$

$x - 6 = \pm\sqrt{50}$

$x = 6 \pm 5\sqrt{2}$

2

$-3x^2 + 2x - 1 = 0$

$\frac{-2 \pm \sqrt{4 - 4(-3)(1)}}{2(-3)}$

$\frac{-2 \pm \sqrt{4-12}}{-6} = \frac{-2 \pm \sqrt{-8}}{-6}$

$\frac{-2 \pm 2i\sqrt{2}}{-6} = \frac{1 \pm 2i\sqrt{2}}{3}$

3

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

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

$(x+3)^2 = -\frac{1}{4}$

$x + 3 = \pm\frac{1}{2}i$

$x = -3 \pm \frac{1}{2}i$

③ SOLVING QUADRATICS PART 2

1

$3x^2 + 18x = -60$

$x^2 + 6x = -20$

$x^2 + 6x + 9 = -20 + 9$

$(x+3)^2 = -11$

$x + 3 = \pm i\sqrt{11}$

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

2

$18x^2 - 50 = 0$

$2(9x^2 - 25) = 0$

$9(3x+5)(3x-5) = 0$

$x = \pm\frac{5}{3}$

3

$0 = x^2 - 2x - 35$

$(x-7)(x+5) = 0$

$x = 7, -5$

④ COMPLEX NUMBERS

1.

$(2-5i)(6+i)$

$12 - 30i + 2i - 5i^2$

$12 - 28i + 5$

$17 - 28i$

2.

$(-3+i) - (9-2i)$

$-3 + i - 9 + 2i$

$-12 + 3i$

3.

$\frac{(4+9i)(2+2i)}{(2-2i)(2+2i)}$

$= \frac{8 + 8i + 18i + 18i^2}{4 - 4i^2}$

$= \frac{26 + 26i}{8} = \frac{13}{4} + \frac{13}{4}i$

4

$(6+i) + (4-3i)$

$10 - 2i$

5

$\frac{1}{4i} \cdot \frac{i}{i} = \frac{i}{4i^2}$

$= -\frac{i}{4}$

⑤ COMPLEX NUMBERS PART 2

1

$1 + 8i$

$\sqrt{1+64} = \sqrt{65}$

2

$-3 + 5i$

$\sqrt{9+25} = \sqrt{34}$

3

$4i$

$\sqrt{16} = 4$

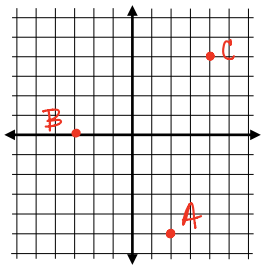
4

$2 - 10i$

$\sqrt{4+100} = \sqrt{104}$

$2^2 \cdot 26$

$2\sqrt{26}$



⑥ USING THE DISCRIMINANT

1

$x^2+5x=-9$

$x^2+5x+9=0$

$5^2-4(1)(9)$

$25-36=-11$

2 imaginary

2

$2x^2-4x+2=0$

$(-4)^2-4(2)(2)$

$16-16=0$

1 real solution

3

$y=x^2+5x-9$

$25-4(1)(-9)$

$25+36=61$

2 x-intercepts

4

$y=-10x-2x\cdot 1$

$4-4(-10)(1)$

$4+40=-36$

no x-intercepts

⑦ GRAPH QUADRATIC INEQUALITIES

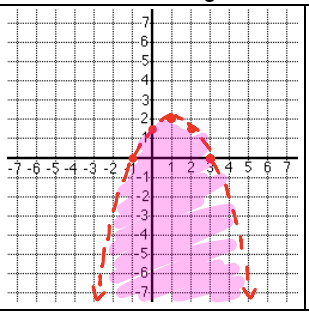
1

$y<-\frac{1}{2}(x-3)(x+1)$

v: $\frac{3-1}{2}=\frac{2}{2}=1$ $-\frac{1}{2}(-2)(2)=2$

(1,2)

$0=-\frac{1}{2}(-3)(1)=\frac{3}{2}=1\frac{1}{2}$



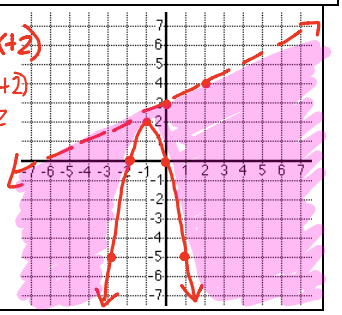
2

$y\geq -2x^2+4x \rightarrow y\geq -2x(x+2)$

$-2(-1)(-1+2)$

$2(1)=2$

$y<\frac{1}{2}x+3$



⑧ WRITING QUADRATIC FUNCTIONS

1

$-1=a(-3+4)^2-4$

$-1=a(1)^2-4$

$3=a$

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

2

$-6=a(4+3)(4+2)$

$-6=a(7)(6)$

$\frac{-6}{42}=a$ $a=-\frac{1}{7}$

$y=-\frac{1}{7}(x+3)(x+2)$

3

$0=a+b+c$

$4=4a+2b+c$

$2=c$

$0=a+b+2$

$4=4a+2b+2$

$-2(-2=a+b)$

$2=4a+2b$

$4=-2a-2b$

$2=4a+2b$

$b=2a$

$a=3$

$0=a+b+c$

$0=3+b+2$

$0=b+5$

$b=-5$

$y=3x^2-5x+2$

⑨ MODELING DROPPED AND LAUNCHED OBJECTS

1

$0=-16t^2+500$

$-500=-16t^2$

$31.25=t^2$

$t\approx 5.6$

2

$10=-16t^2+32t+266$

$0=-16t^2+32t+256$

$0=-16(t^2-2t-16)$

$\frac{2\pm\sqrt{4-4(1)(-16)}}{2}=\frac{2\pm\sqrt{68}}{2}$

$\frac{2+8.2}{2}=5.1$

3

⑩ FIND THE ERROR

1

mistake that was made: The 9 wasn't multiplied by 2 when added to the left side.

correct answer:

$y+1+18=2(x+3)^2$

$y+19=2(x+3)^2$

$y=2(x+3)^2-19$

2

mistake that was made: The square root of 36 is ± 6

correct answer:

$\pm 6=x+2$

$x=-2\pm 6=4,-8$

3

mistake that was made: $2ix-2i$ is $4i^2$, not $2i^2$

correct answer:

$\frac{50-10i}{104}=\frac{25}{52}-\frac{5}{52}i$