Name: Key Date: _____ Block: 4/6

Chapter 10 Test A

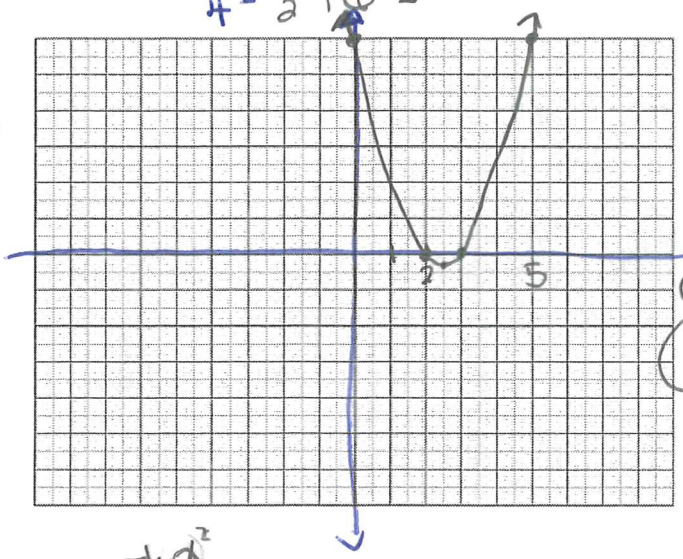
For A and B (10 points each) of the following equations determine the axis of symmetry, the vertex, state if the vertex is a maximum or minimum point, state if the graph opens up or down, sketch a quick graph of each equation and find the solutions (roots). For C and D (2 points each) find y-intercept no graph needed.

A) $y = x^2 - 5x + 6$

$= \frac{25}{4} - \frac{25}{2} + 6 =$

$x = \frac{5}{2}$

4-10+6



Vertex: $(\frac{5}{2}, -\frac{1}{4})$

Axis of symmetry: $x = \frac{5}{2}$

Roots: (2,0) (3,0)

Minimum/Maximum?

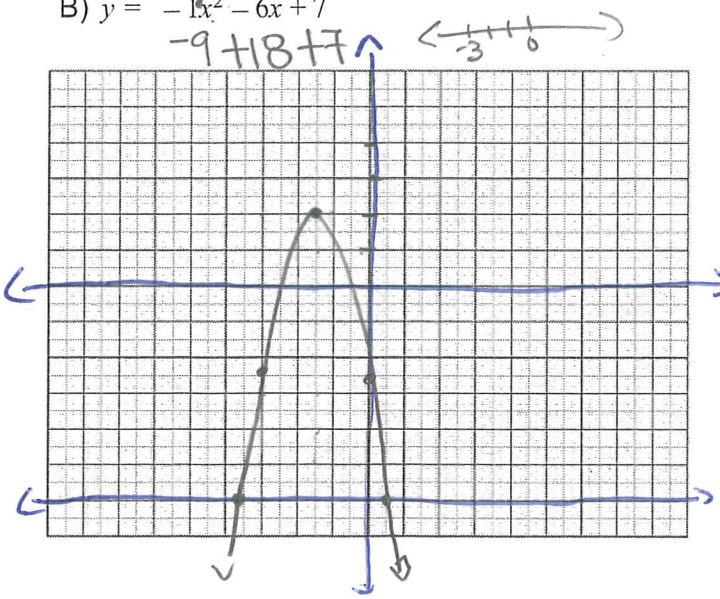
Up or down?

x	y
0	6
2	0
2.5	-0.25
3	0
5	6

$+6x^2$

B) $y = -1x^2 - 6x + 7$

$-9+18+7$



Vertex: (-3, 16)

Axis of symmetry: $x = \frac{6}{-2} = -3$

Roots: (-7,0) (1,0)

Minimum/Maximum?

Up or down?

x	y
-7	0
-6	7
-3	16
0	7
1	0

discuss about crossing x-axis

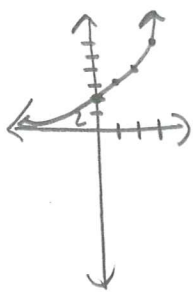
C)

$y = 2^x + 4$

y-intercept

(0,4)

x	y
0	4
1	6
2	8
3	12



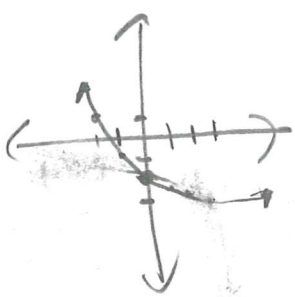
D)

$y = \frac{1}{2}^x - 3$

y-intercept

x	y
0	-2
1	-2.5
2	-2.75
3	-2.875

$-1-6+7$



Solve use any method(HINT remember to set equation = 0) 6 points each—Round answers to the nearest tenth when necessary

1. $x^2 + 7x + 6 = 0$

$(x+6)(x+1) = 0$

$x = -6, -1$

2. $2x^2 + 5x - 6 = 0$

$x = \frac{-5 \pm \sqrt{25 - 4(2)(-6)}}{4} = \frac{-5 \pm \sqrt{25+48}}{4}$

$= -3.4, 0.9$

~~$-3.386,$~~

3. $5x^2 + 2x + 5 = 9$

$5x^2 + 2x - 4 = 0$

$x = \frac{-2 \pm \sqrt{4 - 4(5)(-4)}}{10}$

$= \frac{-2 \pm \sqrt{84}}{10}$

$= -1.1, 0.7$

4. $x^2 + 5x + 12 = 0$

$x = \frac{-5 \pm \sqrt{25 - 4(1)(12)}}{2}$

Prime / no solution

5. $-2x^2 - 5x + 6 = 10x + 8$

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

$x = \frac{15 \pm \sqrt{(-15)^2 - 4(-2)(-2)}}{-4}$

$= \frac{15 \pm \sqrt{225 - 16}}{-4} = -7.4, -0.1$

6. $1x^2 + 2x - 3 = 0$

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

$x = 1, -3$

7. $6y^2 - 16y - 9 = 0$

$x = \frac{16 \pm \sqrt{(-16)^2 - 4(6)(-9)}}{12}$

$= -0.5, 3.1$

8. $x^2 - 2x + 1 = 0$

$(x-1)^2 = 0$

$x = 1$

Find the next three terms of the following geometric sequences (3 points each)

9. 3, 6, 12… 24, 48, 96

10. 54, 36, 24… $16, 10\frac{2}{3}, 7\frac{1}{9}$

Find the geometric mean of each of the following (2 points each)

11. 6, ± 12, 24

12. 3, ± 30, 300

Solve the following equations: (8 points each)

13. Twyla puts $1000 in a savings account that pays 4% interest, compounded monthly. How much money will be in the account 3 years later if she makes no more deposits?

$A = 1000\left(1 + \frac{.04}{12}\right)^{36}$

$= 1000(1.003)^{36} = \$1127.27$

14. If a $5000 piece of equipment depreciates at a rate of 5% per year, how much will it be worth after 5 years?

$y = 5000(1 - .05)^5$

$= 5000(.95)^5$

≈ 3868.90

15. In 2000, the population of Idaho was 1,006,749. Since then, that number has increased an average of 2.85% per year. What was the population of Idaho in 2010?

$y = 1{,}006{,}749(1 + .0285)^{10}$

$\approx \$1{,}333{,}411$

16. A car sells for $21000. If the car depreciates at a rate of 20% per year, find the value of the car in 3 years.

$y = 21{,}000(1 - .20)^3$

$\approx \$10{,}752$

17. Anna has $4,000 to attend college in 5 years. Her parents plan to invest the money in an account with an interest rate of 9% compounded monthly for the 5 years. How much money will Anna have for college?

$P = 4000\left(1 + \frac{.09}{12}\right)^{60}$

$\approx \$6262.72$