MBF 3C Mrs. Roen Name: _____

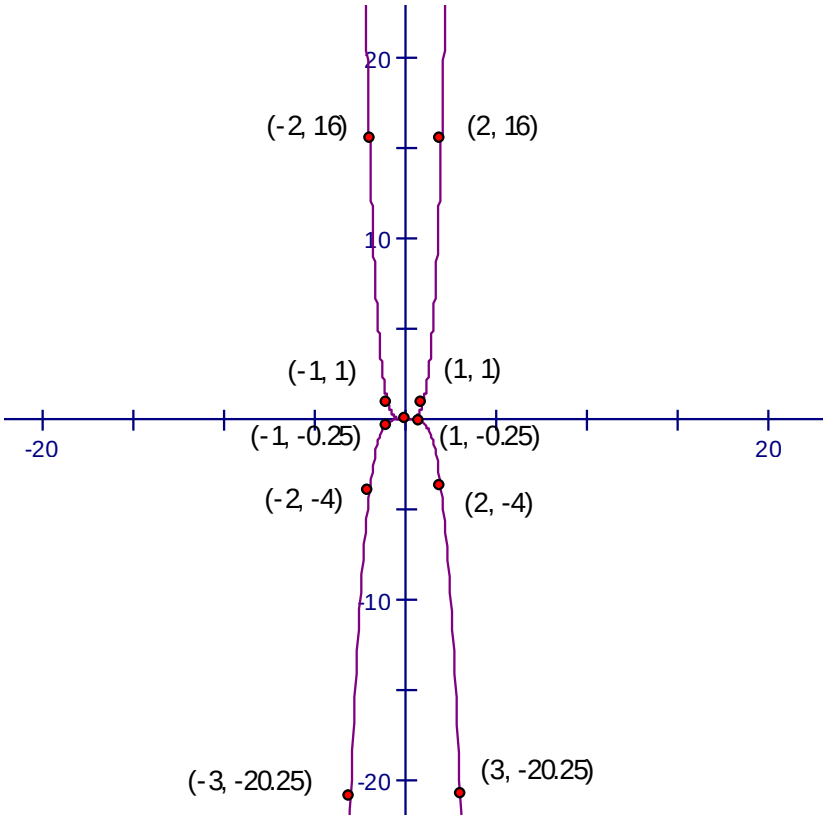
Grade 11 College Math **Day: Lesson 2 - 3**

Unit: Transformations of Quadratics **Topic: Stretching Quadratics**

- ***homework check:*** **Lesson 2 - 2**
- ***note:*** **Stretching Quadratics : Investigating the Role of "a"**

When investigating the role of "a", we must pay very close attention to how the original points in the parabola are affected, not just the vertex. Given the basic shape of $y = x^4$, determine the effects of $y = \frac{-1}{4}x^4$.

x	$y = x^4$	$y = \frac{-1}{4}x^4$
-4	**256**	**-64**
-3	**81**	**-20.25**
-2	**16**	**-4**
-1	**1**	**-0.25**
0	**0**	**0**
1	**1**	**-0.25**
2	**16**	**-4**
3	**81**	**-20.25**
4	**256**	**-64**



Therefore, the basic x^4 is reflected by the negative sign and compressed by the ¼ .

- ***homework assignment:*** **<u>Investigating the Role of "a"</u> booklet**

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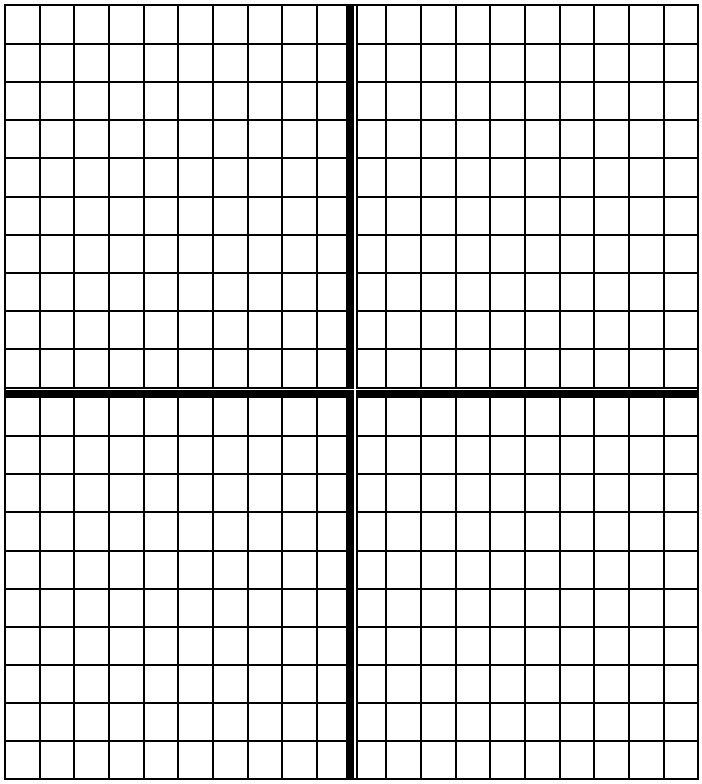
Investigating the Role of "A"

Total	**49**	

1. Draw the basic parabola $y = x^2$ using the table of values provided. (4 marks)

a)

x	y	

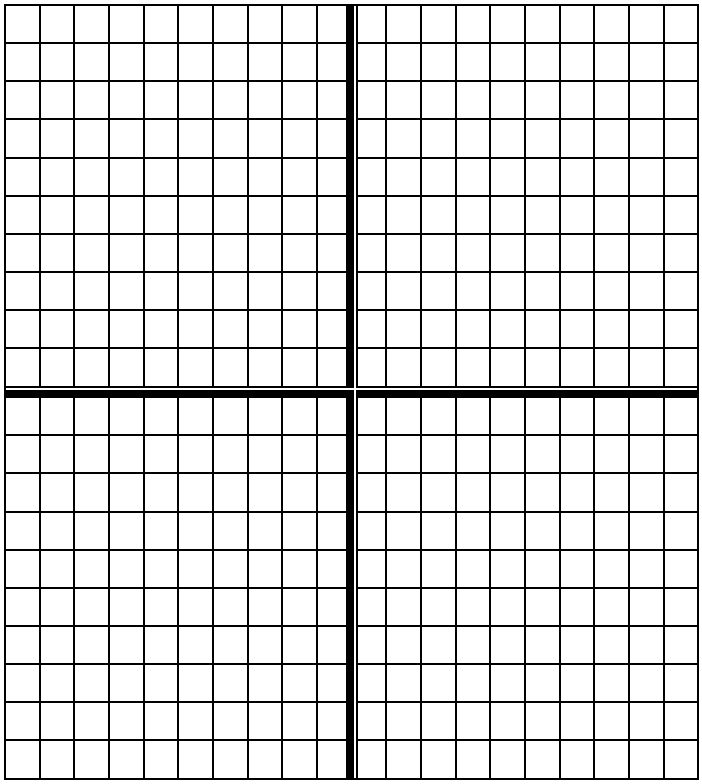


b) Where is the vertex of this function? (1 mark)

2. Draw the parabola $y = 2x^2$ using the table provided. (4 marks)

a)

x	y



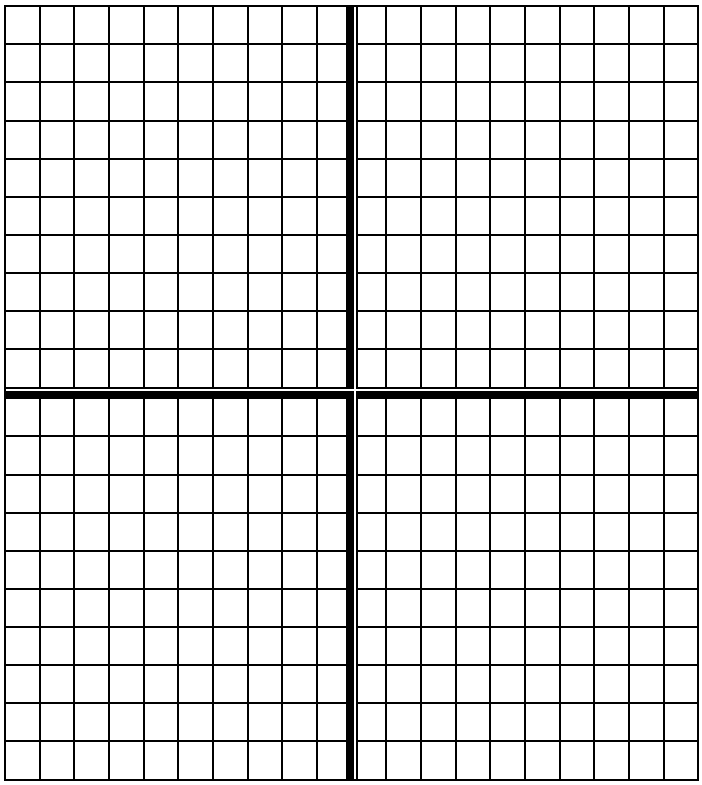
b) Where is the vertex of this parabola? (1 mark)

c) Describe how this parabola is transformed from the original $y = x^2$. (2 marks)

3. Draw the parabola $y = -\frac{1}{2}x^2$ using the table provided. (4 marks)

a)

x	y



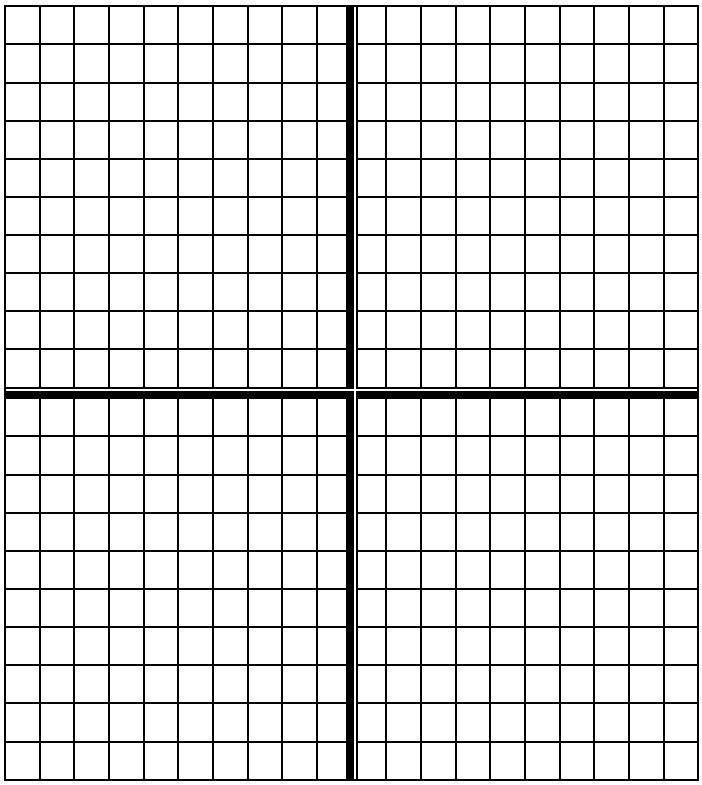
b) Where is the vertex of this parabola? (1 mark)

c) Describe how this parabola is transformed from the original $y = x^2$. (2 marks)

4. Draw the parabola $y = -3x^2$ using the table provided. (4 marks)

a)

x	y



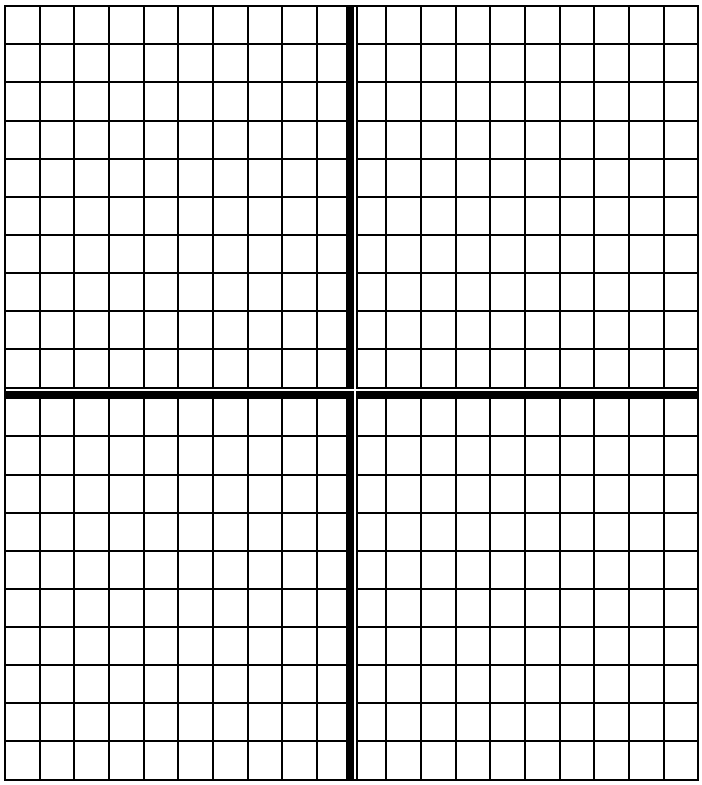
b) Where is the vertex of this parabola? (1 mark)

c) Describe how this parabola is transformed from the original $y = x^2$. (2 marks)

5. Draw the parabola $y = \frac{1}{3}x^2$ using the table provided. (4 marks)

a)

x	y



b) Where is the vertex of this parabola? (1 mark)

c) Describe how this parabola is transformed from the original $y = x^2$. (2 marks)

6. What kind of change does the "A" control in the function $y = a(x - g)^2 + h$? (1 mark)

7. Use this knowledge to describe the movement of each of the following. (2 marks each)

a) $y = 4x^2$

b) $y = -\frac{4}{5}x^2$

c) $y = -5x^2$

d) $y = \frac{3}{2}x^2$

e) $y = -\frac{1}{4}x^2$

f) $y = \frac{5}{4}x^2$

8. Without a table of values, use your knowledge of translations to graph the parabola $y = \frac{3}{2}x^2$. (3 marks)

Describe the change: