

Name _____ Date _____ Period _____

Transformations of $f(x) = |x|$, Part I - Practice

Algebra II | Unit 2 | Lesson 2 Practice | TEK A2.6.C

Objective: I can describe and graph the effect of a and b on $f(x) = a|bx|$ - stretches, compressions, and reflections.

Section 1 — Recall

1. Describe the transformation for $f(x) = 3|x|$.

_____ Vertex: _____

2. Describe the transformation for $f(x) = (1/4)|x|$.

_____ Vertex: _____

3. Describe the transformation for $f(x) = -|x|$.

4. Describe the transformation for $f(x) = |5x|$.

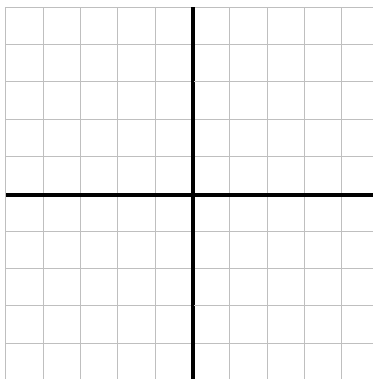
Section 2 — Apply

5. Describe $f(x) = |(1/3)x|$, then give its vertex.

_____ Vertex: _____

6. Describe $f(x) = -6|x|$. It combines TWO effects - name both.

7. Graph $f(x) = 3|x|$. Each square is 1 unit; both axes run -5 to 5. Is it steeper or flatter than the parent?



Steeper or flatter: _____

Section 3 — Challenge

8. A function of the form $f(x) = a|x|$ passes through the point (2, 8). Find a , then write the function.

$a|2| = 8 \rightarrow a = \underline{\hspace{2cm}} \quad f(x) = \underline{\hspace{2cm}}$

9. True or False: $f(x) = |-4x|$ and $f(x) = 4|x|$ produce the same graph. Justify by evaluating BOTH at $x = -2$ and at $x = 3$.

At $x = -2$: $|-4(-2)| = \underline{\hspace{2cm}}$ and $4|-2| = \underline{\hspace{2cm}}$ At $x = 3$: $\underline{\hspace{2cm}}$

True or False: $\underline{\hspace{4cm}}$

Section 4 — Explain It

10. Explain why the vertex of $f(x) = a|bx|$ stays at $(0, 0)$ no matter what numbers a and b are.
