

Name: _____

Date: _____

$a \cdot f(x)$ stretches VERTICALLY ($|a| > 1$ taller, $|a| < 1$ shorter, negative flips). Compare to the parent graph. Last two are challenge problems.

1. $2 \cdot f(x)$ does what to heights?

show your work

2. $(1/2) \cdot f(x)$ does what?

show your work

3. $y = 3x^2$ vs $y = x^2$: which is narrower?

show your work

4. The point (2, 4) is on $y = x^2$.
Where is it on $y = 3 \cdot f(x)$?

show your work

5. $-2 \cdot f(x)$: describe two effects.

show your work

6. Which is taller at $x = 1$: $y = 5x^2$ or $y = x^2$?

show your work

7. $y = \frac{1}{4}x^2$: taller or shorter than parent, and does it open up?

show your work

8. Point $(3, 2)$ is on $y = f(x)$. Find its image on $y = -3 \cdot f(x)$.

show your work

9. A parabola through (0,0) and (2, 12) has form $y = a \cdot x^2$. Find a , and is it narrower than $y = x^2$? ★ CHALLENGE

show your work

10. $y = a \cdot f(x)$ sends (4, 5) to (4, -15). Find a and describe the transformation. ★ CHALLENGE

show your work