Day 33 – Absolute Value Functions (Transformations)
p. 160-161 #'s 5-10 (Do not need to describe Domain/Range), 19-26, 45, and 49

In Exercises 5–12, graph the function. Compare the graph to the graph of $f(x) = |x|$. Describe the domain and range. *(See Examples 1 and 2.)*

5. $d(x) = |x| - 4$ Down 4

6. $r(x) = |x| + 5$ up 5

7. $m(x) = |x + 1|$ Left 1

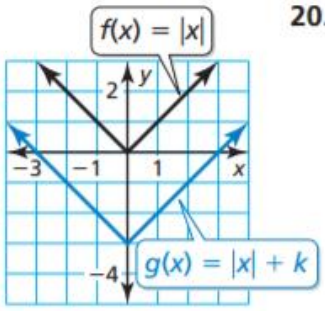
8. $v(x) = |x - 3|$ Right 3

9. $p(x) = \frac{1}{3}|x|$ v. shrink bafo 1/3

10. $j(x) = 3|x|$ v. stretch bafo 3

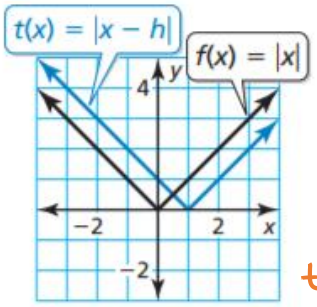
In Exercises 19–22, compare the graphs. Find the value of h, k, or a.

19.



Down 3 K = -3

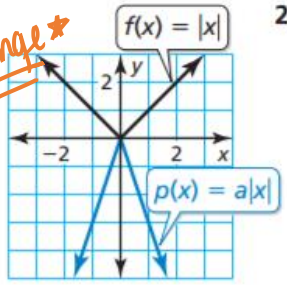
20.



Right 1

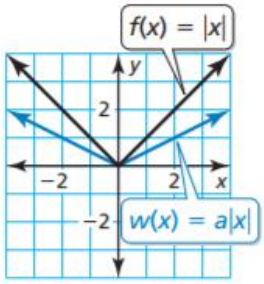
t(x) = |x − 1|

21. *challenge*



p(x) = -3|x|

22.



a = 1/2

w(x) = 1/2 |x|

In Exercises 23–26, write an equation that represents the given transformation(s) of the graph of $g(x) = |x|$.

23. vertical translation 7 units down $h(x) = |x| - 7$

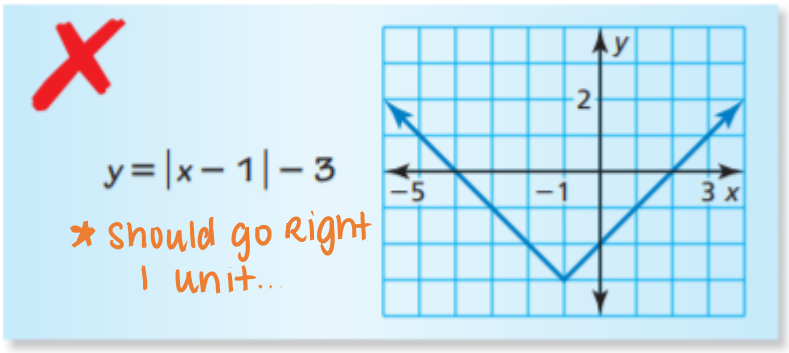
24. horizontal translation 10 units left $h(x) = |x + 10|$

25. vertical shrink by a factor of $\frac{1}{4}$ $h(x) = \frac{1}{4}|x|$

26. vertical stretch by a factor of 3 and a reflection in the x-axis $h(x) = -3|x|$

ERROR ANALYSIS **In Exercises 45 and 46, describe and correct the error in graphing the function.**

45.



y = |x + 1| − 3

49. **WRITING** Compare the graphs of $p(x) = |x - 6|$ and $q(x) = |x| - 6$.

shifts Right 6

shifts Down 6