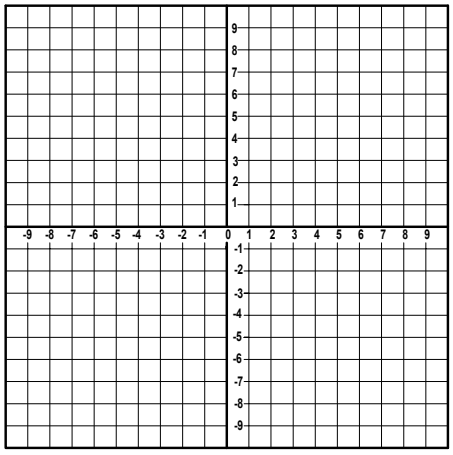
Graphing Calculator Investigations ~ Intro to Transformations

Quadratic Functions **Name: _____ pd _____**

Parent function:



Work with graphing calculator to do the following tasks:

1. **Graph parent function:** $y = x^2$
2. **What happens when the function is negative?** $y = -x^2$ _____

Graph each of the following functions and describe what happens to the parent function.

1. $y = (x+2)^2$ _____
2. $y = x^2 - 5$ _____
3. $y = x^2 + 7$ _____
4. $y = -(x-6)^2$ _____
5. $y = (x+8)^2 - 3$ _____
6. $y = (x-4)^2 + 5$ _____
7. $y = (2x+1)^2$ _____
8. $y = (0.5x+1)^2$ _____

Overall conclusions:

positive number inside parentheses: _____

negative number inside parentheses: _____

positive number after parentheses or x^2 : _____

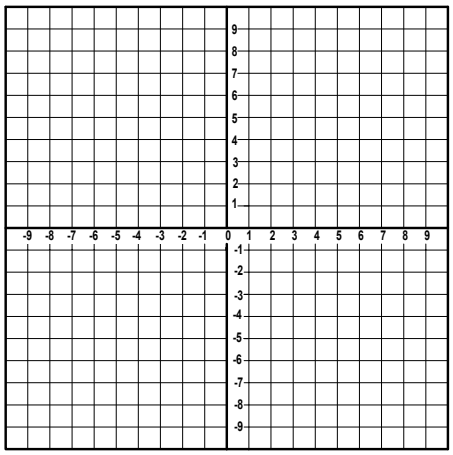
negative number after parentheses or x^2 : _____

number before parentheses or x^2 : _____

negative before parentheses or x^2 : _____

Square Root Functions

Parent function:



Work with graphing calculator to do the following tasks:

3. **Graph parent function:** $y = \sqrt{x}$
4. **What happens when the function is negative?** $y = -\sqrt{x}$ _____

Graph each of the following functions and describe what happens to the parent function.

9. $y = \sqrt{x+2}$ _____

10. $y = \sqrt{x-5}$ _____

11. $y = \sqrt{x}+7$ _____

12. $y = -\sqrt{x-6}$ _____

13. $y = \sqrt{x+8}-3$ _____

14. $y = \sqrt{x-4}+5$ _____

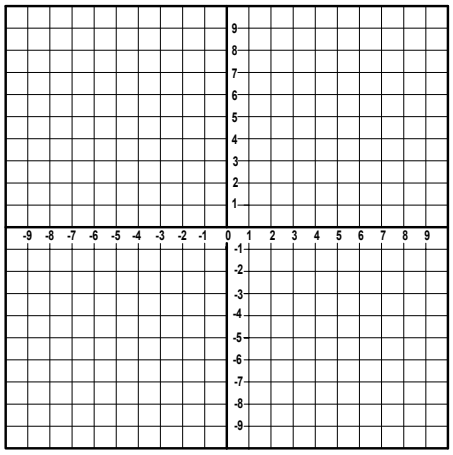
15. $y = \sqrt{2x+1}$ _____

16. $y = \sqrt{0.5x+1}$ _____

Overall conclusions:
positive number inside square root symbol: _____
negative number inside square root symbol: _____
positive number after square root symbol: _____
negative number after square root symbol: _____
number before square root symbol: _____
negative before square root symbol: _____

Absolute Value Functions

Parent function:



Work with graphing calculator to do the following tasks:

5. **Graph parent function:** $y = |x|$
6. **What happens when the function is negative?** $y = -|x|$ _____

Graph each of the following functions and describe what happens to the parent function.

17. $y = |x + 2|$ _____

18. $y = |x| - 5$ _____

19. $y = |x| - 7$ _____

20. $y = -|x - 6|$ _____

21. $y = |x + 8| - 3$ _____

22. $y = |x - 4| + 5$ _____

23. $y = |2x + 1|$ _____

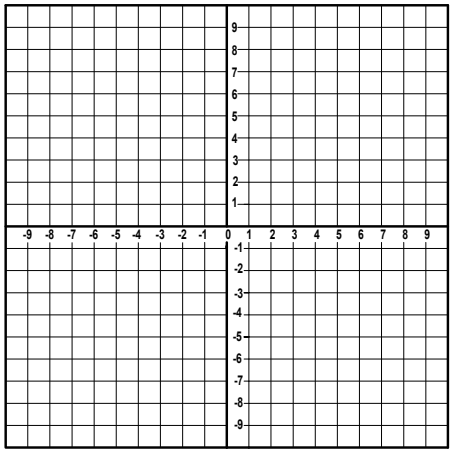
24. $y = |0.5x + 1|$ _____

Overall conclusions:

positive number inside absolute value symbols: _____
negative number inside absolute value symbols: _____
positive number after absolute value symbols: _____
negative number after absolute value symbols: _____
number before absolute value symbol: _____
negative before absolute value symbol: _____

Notes on Exponential Functions

Parent function:



Work with graphing calculator to do the following tasks:

7. **Graph parent function:** $y = 2^x$

Graph each of the following functions and describe what happens to the parent function.

25. $y = 2^x + 3$ _____

26. $y = 2^x - 4$ _____

27. $y = 2^{x+5}$ _____

28. $y = 2^{x-9}$ _____

29. $y = 2^{x+3} - 5$ _____

30. $y = 2^{x-6} + 4$ _____

New parent function.

31. $y = (0.5)^x$ **What is different from** $y = 2^x$ **?** _____

Predict what you think will happen in this graph below. _____

32. $y = (0.5)^x + 3$ **Was your prediction correct?** _____ **What happened to your graph?**

_____

Overall conclusions:

positive number at the end: _____

negative number at the end: _____

positive number after the x in the exponent: _____

negative number after the x in the exponent: _____