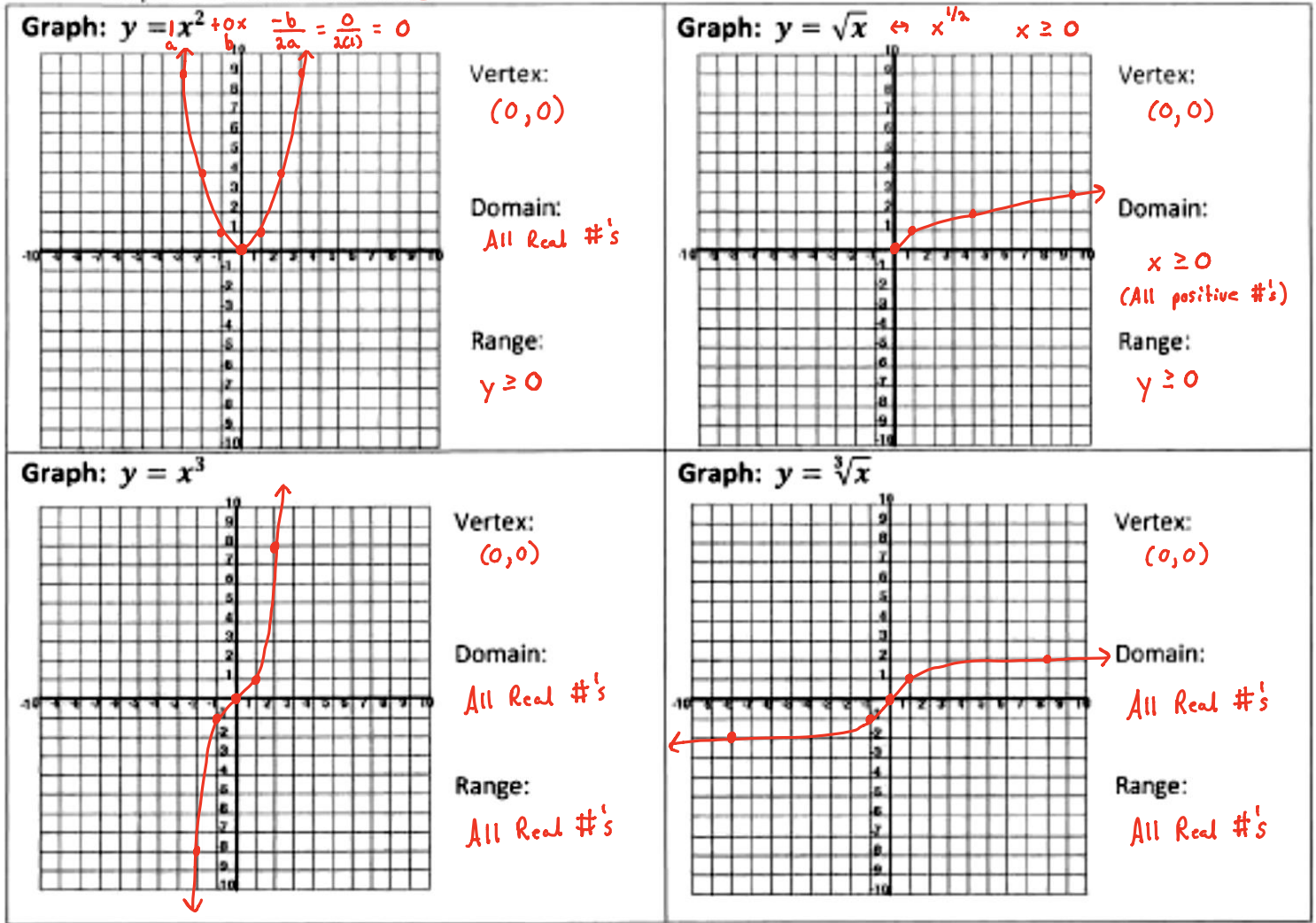
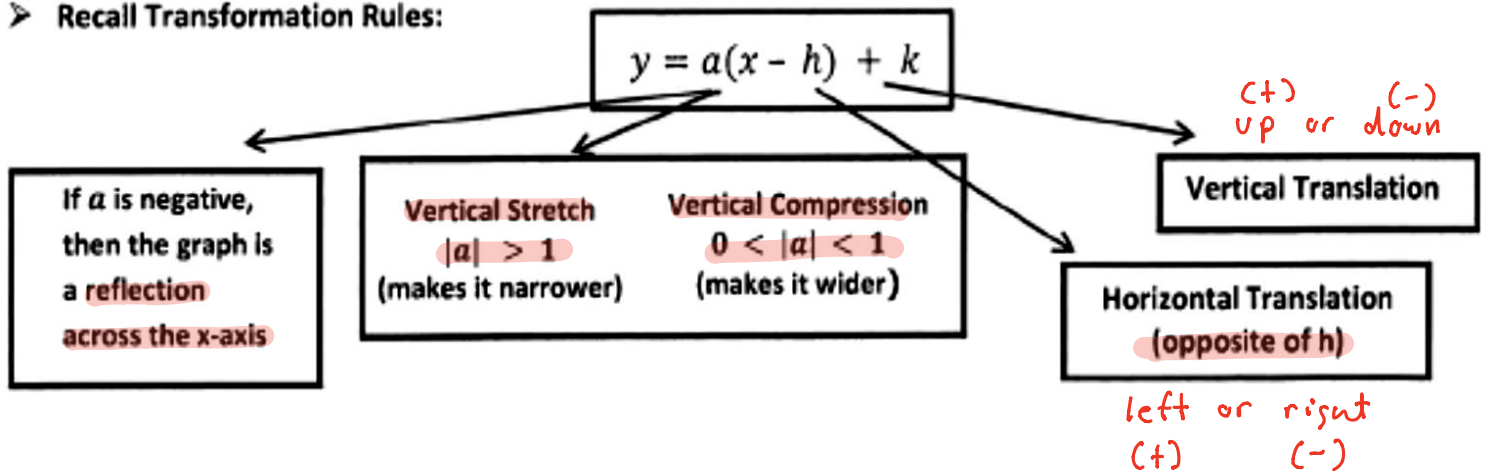


➤ Graphs of Parent Functions:



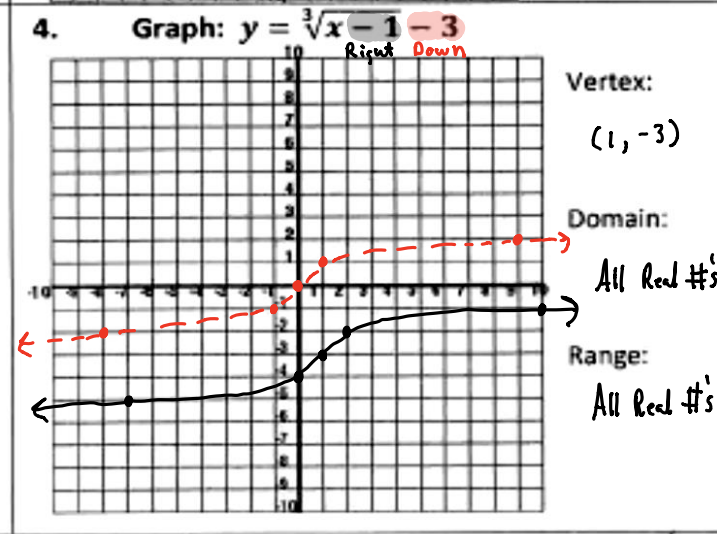
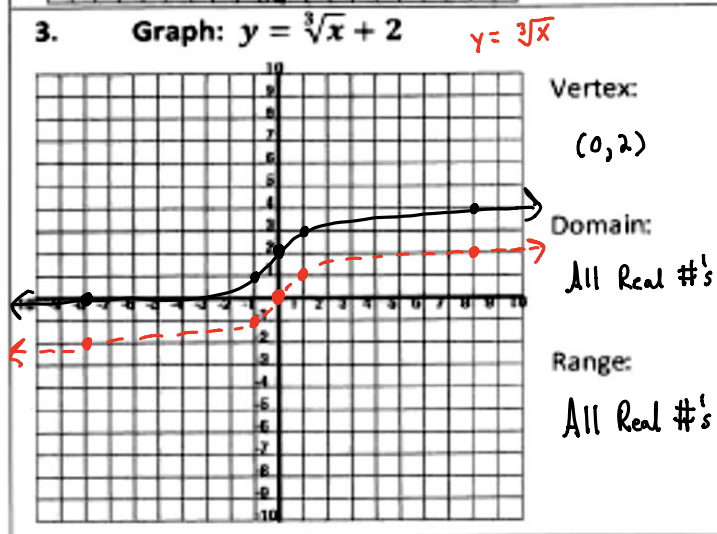
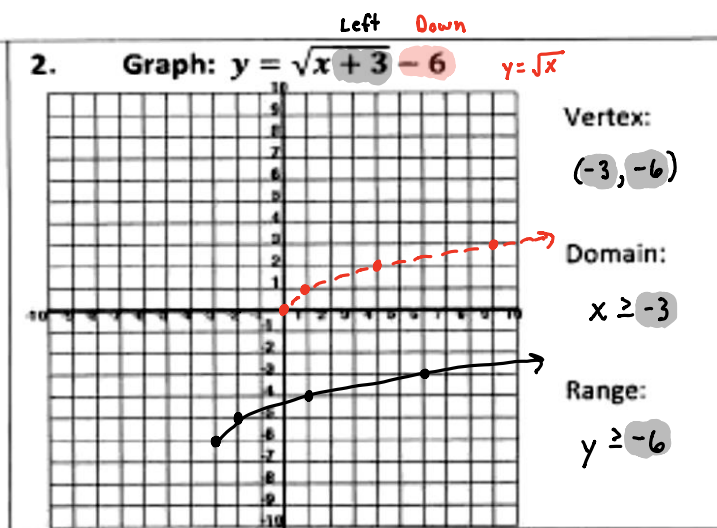
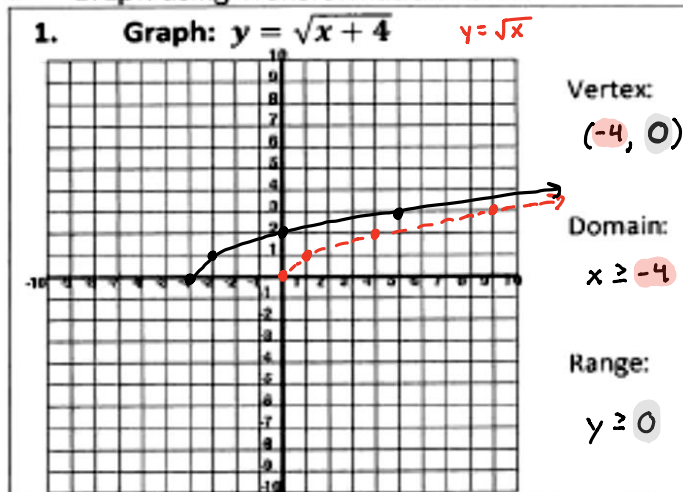
➤ Recall Transformation Rules:



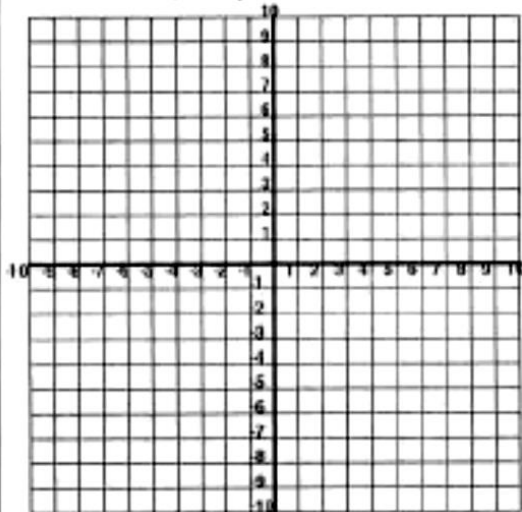
Quadratic Function	Vertex	Shift Left or Right	Shift Up or Down
$y = (x - 3)^2 + 6$ <small>Change sign Keep sign</small>	(3, 6)	Right 3 units	Up 6 units
$y = (x + 1)^2$	(-1, 0)	Left 1 unit	None
$y = x^2 - 4$	(0, -4)	None	Down 4 units
Square Root Function	Vertex	Shift Left or Right	Shift Up or Down
$y = \sqrt{x - 2} + 5$ <small>Change sign Keep sign</small>	(2, 5)	Right 2 units	Up 5 units
$y = \sqrt{x} - 1$	(0, -1)	None	Down 1 unit
$y = \sqrt{x + 3}$	(-3, 0)	Left 3 units	None

Cubic Function	Vertex	Shift Left or Right	Shift Up or Down
$y = (x + 2)^3 - 5$	(-2, -5)	Left 2 units	Down 5 units
$y = x^3 + 7$	(0, 7)	None	Up 7 units
$y = (x - 8)^3$	(8, 0)	Right 8 units	None
Cube Root Function	Vertex	Shift Left or Right	Shift Up or Down
$y = \sqrt[3]{x} - 9$	(0, -9)	None	Down 9 units
$y = \sqrt[3]{x + 2} + 4$	(-2, 4)	Left 2 units	Up 4 units
$y = \sqrt[3]{x - 8}$	(8, 0)	Right 8 units	None

➤ Graph using Transformation Rules:



5. Graph: $y = -\sqrt{x} + 2$

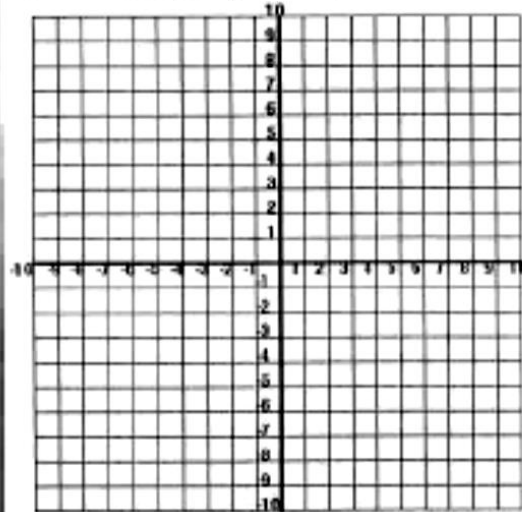


Vertex:

Domain:

Range:

6. Graph: $y = -\sqrt[3]{x+1}$



Vertex:

Domain:

Range:

7. Write the equation of a **square root** function with a **vertex at $(-5, 3)$** .

$$y = \sqrt{x}$$

$$y = \sqrt{x + 5} + 3$$

x y
↓
Change
Sign

8. Write the equation of a **square root** function that has been translated right ten units and up six units.

9. Write the equation of a **cube root** function that has been translated left three units and down two units.

10. Write the equation of a **square root** function that has been translated **right four units** and **reflected** across the **x-axis**.

$$y = \sqrt{x}$$

(-)

$$y = -\sqrt{x - 4}$$