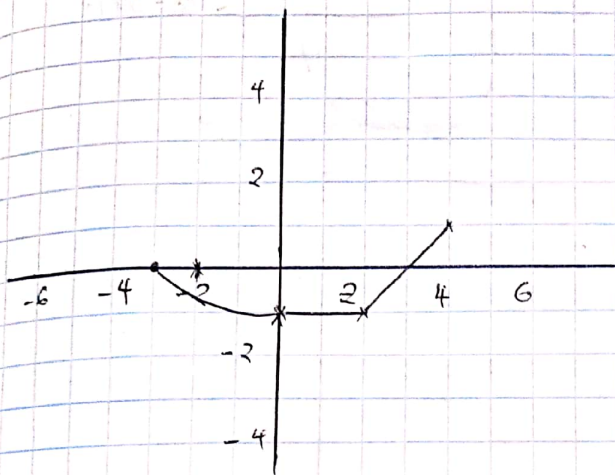
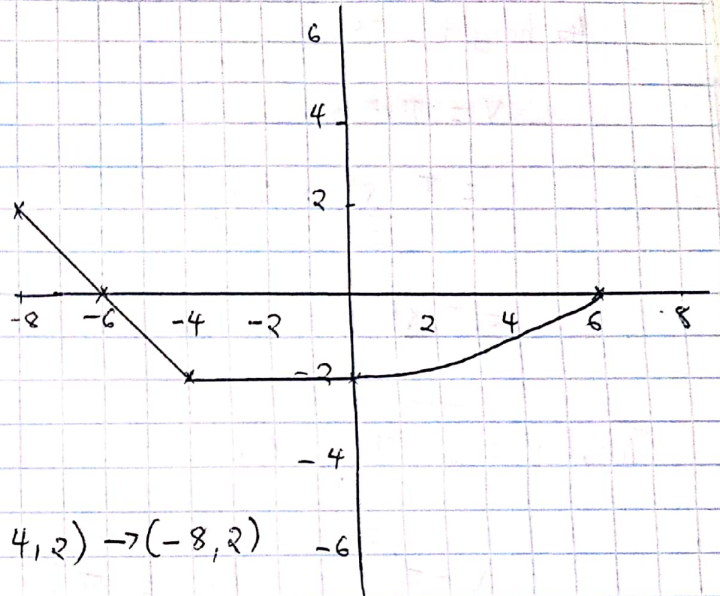


$$1. (a) y = \frac{1}{2}f(x)$$



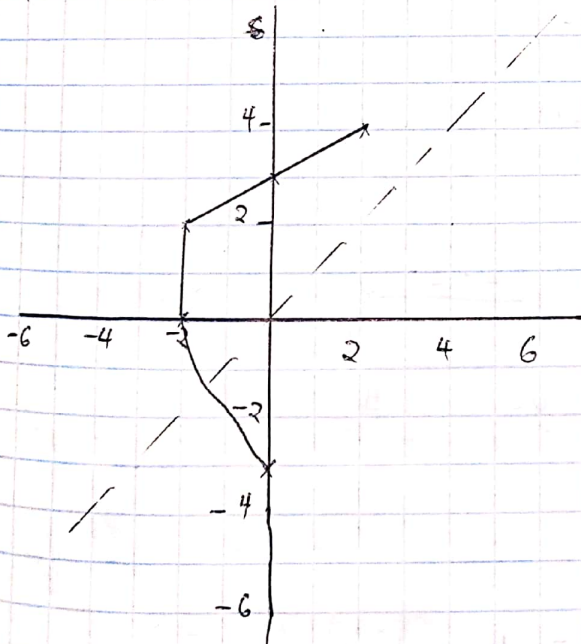
$$(2, -2) \rightarrow (2, -1)$$

$$(b) y = f(-\frac{1}{2}x)$$



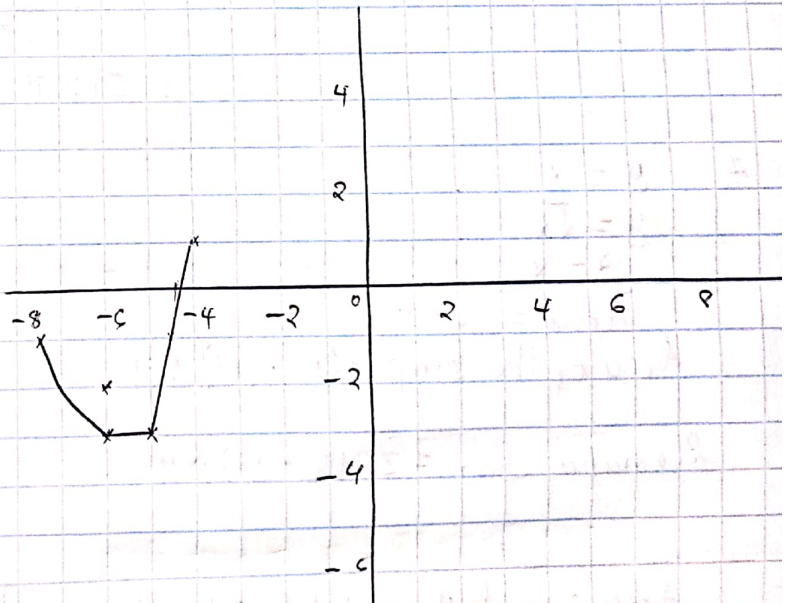
$$(4, 2) \rightarrow (-8, 2)$$

$$(c) x = f(y)$$

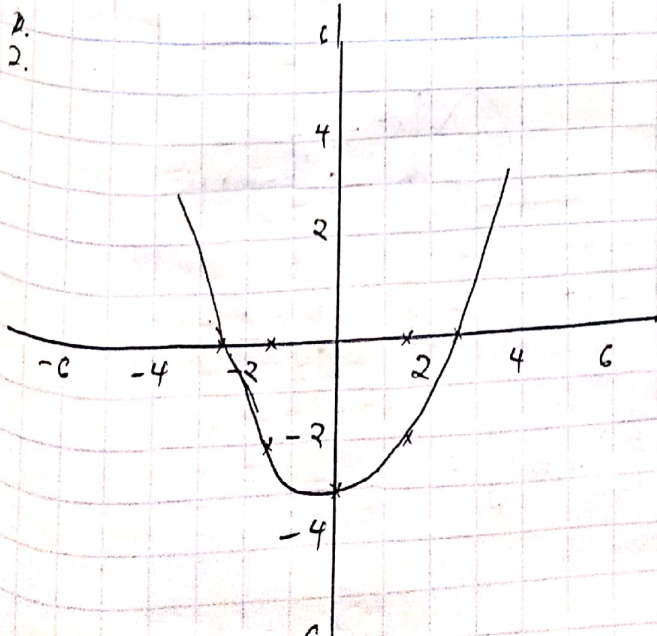


$$(0, -2) \rightarrow (-2, 0)$$

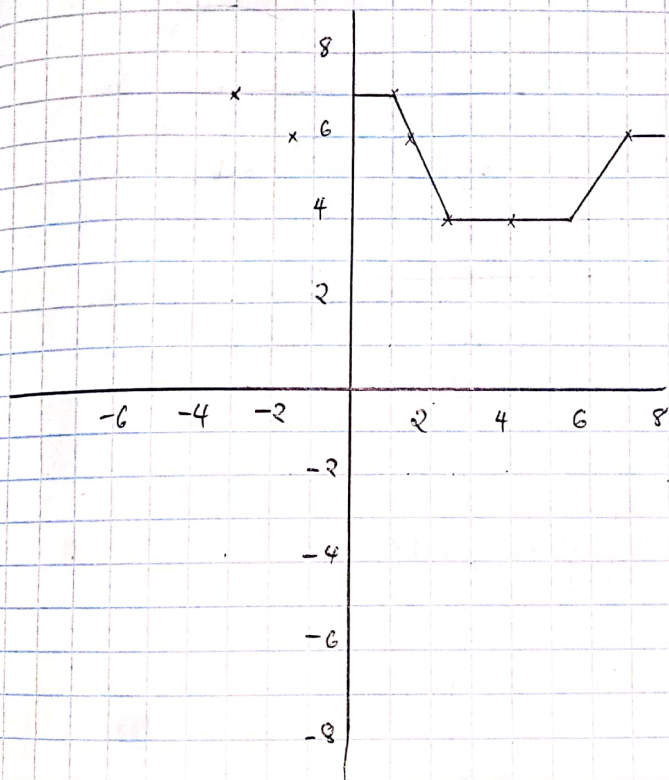
$$(d) y = f(2x + 6) - 1$$



$$(4, 2) \rightarrow (-4, 1)$$



$$3. \quad 2y = f(2x-4) + 6$$



$$4. \quad y = f(x)$$

$$y = f(-(x-3))$$

$$5. (a) \quad y = f(x-4) - 2$$

$$(b) \quad y = 2f(-x)$$

$$(c) \quad y = f(2(x+3))$$

$$6. \quad y = \frac{4x}{3x-5}$$

$$x = \frac{4y}{3y-5}$$

$$x(3y-5) = 4y$$

$$3xy - 5x = 4y$$

$$3xy - 4y = 5x$$

$$y(3x-4) = 5x$$

$$y = \frac{5x}{3x-4}$$

$$f^{-1}(x) = \frac{5x}{3x-4}$$

$$7. (a) \quad y = 3x^2 + 5$$

$$y = \frac{1}{4}(3(x+5)^2 + 5)$$

$$y_1 = \frac{1}{4}(3(x+5)^2 + 5)$$

$$(b) \text{ Compression, } y = 3(3x)^2 + 5$$

$$\text{reflection} \Rightarrow y = 3(-3x)^2 + 5$$

$$\text{upwards} \Rightarrow y = 3(-3x)^2 + 5 + 7$$

$$y = 3(-3x)^2 + 12$$

$$(c) \text{ Expansion} \Rightarrow y = 3\left(\frac{x}{2}\right)^2 + 5$$

$$\text{right} \Rightarrow y = 3\left(\frac{x}{2} - 5\right)^2 + 5$$

$$\text{down} \Rightarrow y = 3\left(\frac{x}{2} - 5\right)^2 + 5 - 3$$

$$y = 3\left(\frac{x}{2} - 5\right)^2 + 2$$

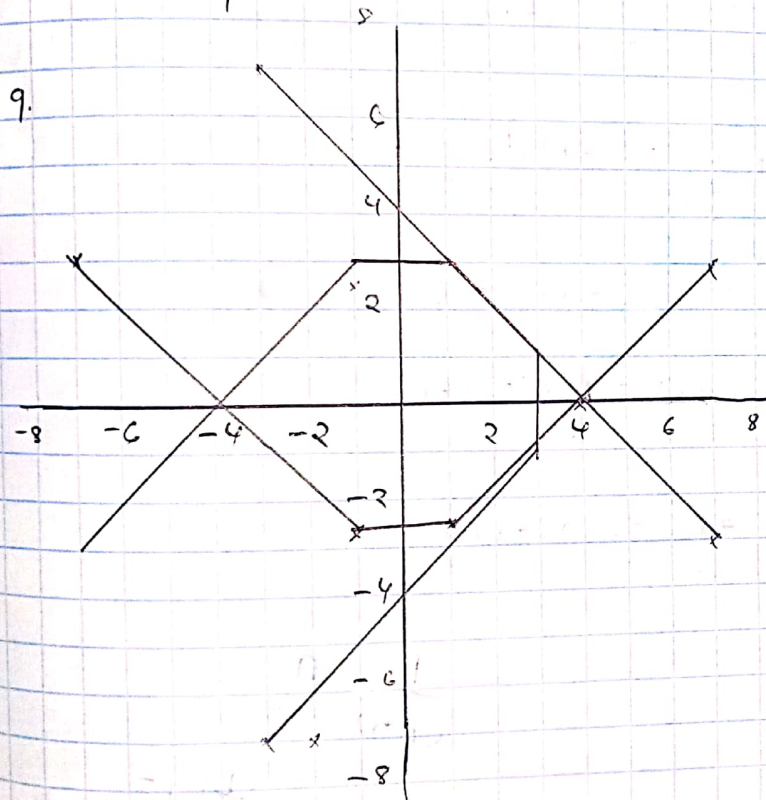
$$8. y = \sqrt{x^2 + 7}$$

$$(a) y = \sqrt{(3x)^2 + 7}$$

$$y = \sqrt{9x^2 + 7}$$

$$(b) y = \frac{1}{4} \sqrt{(-x)^2 + 7}$$

$$y = \frac{1}{4} \sqrt{x^2 + 7}$$



$$(a) (-7, 3), (-4, 0), (-1, -3), (1, -3), (4, 0), (7, 3)$$

$$(b) (7, -3), (4, 0), (1, 3), (-1, 3), (-4, 0), (-7, -3)$$

$$(c) (-3, -7), (0, -4), (3, -1), (3, 1), (0, 4), (-3, 7)$$

$$10. y = \frac{4}{f(-x+3)-1} + 5$$

$$-x+3 = 10$$

$$x = -7$$

$$y(-7) = \frac{4}{f(7+3)-1} + 5 = \frac{4}{f(10)-1} + 5$$

$$y = \frac{4}{4-1} + 5 = \frac{19}{3}$$

$$\text{point} = \left(-7, \frac{19}{3}\right)$$