

1-86) graph and describe

$$y = 2\sqrt{x-1} + 3$$

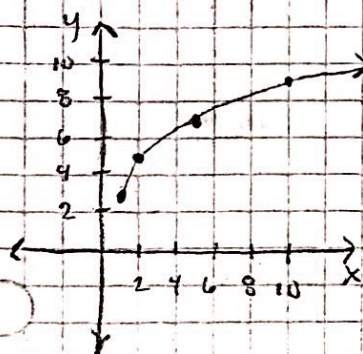
$$f(1) = 2(\sqrt{1-1}) + 3 = 2(0) + 3 = 3$$

$$f(2) = 2(\sqrt{2-1}) + 3 = 2(1) + 3 = 5$$

$$f(5) = 2(\sqrt{5-1}) + 3 = 2(\sqrt{4}) + 3 = 2(2) + 3 = 4 + 3 = 7$$

$$f(10) = 2(\sqrt{10-1}) + 3 = 2(\sqrt{9}) + 3 = 2(3) + 3 = 6 + 3 = 9$$

x	y
1	3
2	5
5	7
10	9



The graph is a curve going up, slowly from left to right. As x increases, y increases. There are no intercepts. The starting point is (1, 3). Domain $x \geq 1$ and Range $y \geq 3$.

1-87) solve

a) $3x - 1 = 4x + 8 - x$

$$3x - 1 = 3x + 8$$

$$3x = 3x + 9$$

$$0 = 9 \quad \text{No solution}$$

0 does not equal 9.

b) $-10 + 5x = 7x - 4$

$$5x = 7x + 6$$

$$-2x = 6 \quad x = -3$$

Check:

$$-10 + 5(-3) = 7(-3) - 4$$

$$-10 - 15 = -21 - 4$$

$$-25 = -25 \quad \checkmark$$

1-87) cont'd

c) $28 - 6x + 4 = 30 - 3x$

check:

$$32 - 6x = 30 - 3x$$

$$32 - 6\left(\frac{2}{3}\right) = 30 - 3\left(\frac{2}{3}\right)$$

$$-6x = -2 - 3x$$

$$32 - \frac{12}{3} = 30 - \frac{6}{3}$$

$$+3x \quad +3x$$

$$32 - 4 = 30 - 2$$

$$\frac{-3x}{-3} = \frac{-2}{-3} = \frac{2}{3}$$

$$28 = 28 \quad \checkmark$$

d) $4x - 1 = 9x - 1 - 5x$

$$4x - x = 4x - 1$$

$$4x = 4x$$

any value of x will make the equation true.

$$\frac{4x}{-4x} = \frac{4x}{-4x}$$

$$0 = 0 \quad \checkmark$$

all real #s

1-88) find $f(4)$ for all functions below.

a) $f(x) = -|x-7| + 3$

$$f(x) = -|4-7| + 3 = -|-3| + 3 = -3 + 3 = 0$$

b) $f(x) = \sqrt{x+12} = f(4) = \sqrt{4+12} = \sqrt{16} = \frac{4}{4} = 1$

c) $f(x) = 2 - \sqrt[3]{x+23} = 2 - \sqrt[3]{4+23} = 2 - \sqrt[3]{27} = 2 - 3 = -1$

1-89) evaluate

a) $2 \div |3-4| = 2 \div |-1| = 2 \div 1 = 2$

b) $11 - 6 \div 15 = 11 - (6 \div 15) = 11 - 0.4 = 10.6$

c) $-19 + \sqrt[3]{-8} = -19 + (-2) = -21$

d) $-11 - \sqrt{16} = -11 - 4 = -15$

1-90) use the function machine

$$f(x) = -6x - 3$$

a) if input is -8, output is?

$$f(-8) = -6(-8) - 3 = 48 - 3 = 45$$

b) if output is 21, what is input?

$$21 = -6x - 3$$

$$24 = -6x$$

$$-4 = x$$