

10-2-19 1st Trig

Domain
x value

Domain of the age of people
you would date.

Give me an equation where
the domain is every number
except $x \neq 4$.

$$f(x) = \frac{2}{x-4}$$

Give one where domain is
 \mathbb{R} except $x \neq 100$

$$f(x) = \frac{\quad}{x-100} \quad \leftarrow \text{Anything like } 4x, 2, x-1000$$

$$f(x) = \frac{\quad}{2x-200}$$

$$f(x) = \frac{\quad}{100-x}$$

① What is the domain of
 $f(x) = \frac{4x-5}{x-1}$

Domain: \mathbb{R} except $x \neq 1$

② What is the domain of
 $f(x) = \frac{x^{215}-1}{2x-10}$
 $2x-10 \neq 0$

Domain: \mathbb{R} except $x \neq 5$

③ What is the domain of
 $f(x) = \frac{805x-3}{3x-10}$

$$\begin{array}{r} 3x-10 \neq 0 \\ +10 \quad +10 \\ \hline 3x + 10 \\ \frac{3x}{3} + \frac{10}{3} \\ x + 3\frac{1}{3} \end{array}$$

\mathbb{R} except $x \neq 3.\bar{3}$

④ What is domain of

$$f(x) = \frac{50,000,000}{(x-1)(x+2)(x-10)}$$

\mathbb{R} except $x \neq 1, -2, 10$

Give me a situation where domain must be

a.) greater than or equal to 18.

b.) greater than or equal to 21

Equation: $f(x) = \sqrt{x-21}$

⑤ Give domain of $f(x) = \sqrt{x+5}$

$$\begin{array}{r} x+5 \geq 0 \\ -5 \quad -5 \\ \hline x \geq -5 \end{array}$$



⑥ Give domain of $f(x) = 4x + 12$

\mathbb{R}

⑦ $f(x) = \frac{5}{2x-1}$

$$\begin{array}{r} 2x-1 \neq 0 \\ +1 \quad +1 \\ \hline 2x \neq 1 \end{array}$$

$$\frac{2x}{2} \neq \frac{1}{2}$$

$$x \neq \frac{1}{2}$$

\mathbb{R} except $x \neq \frac{1}{2} (.5)$

$$\textcircled{8} f(x) = \sqrt{4x - 20}$$

$$4x - 20 \geq 0$$
$$\frac{+20 \quad +20}{\hline}$$

$$\frac{4x}{4} = \frac{20}{4}$$

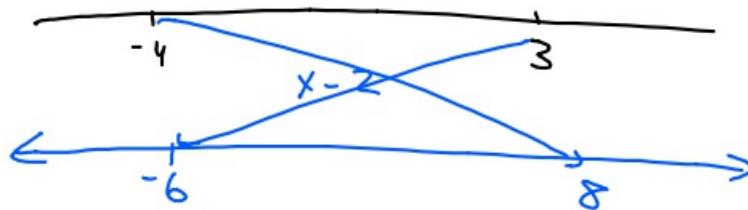
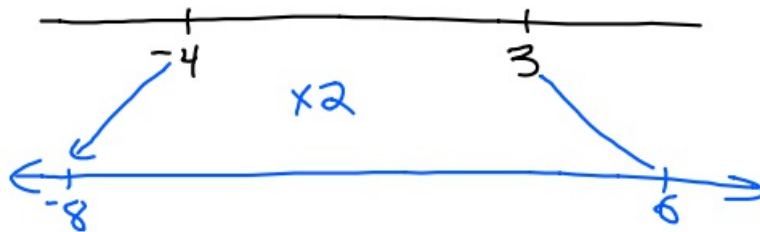
$$\mathbb{R}: x \geq 5$$

$$\textcircled{9} f(x) = \sqrt{-2x + 4}$$

$$-2x + 4 \geq 0$$
$$\frac{-4 \quad -4}{\hline}$$

$$\frac{-2x}{-2} = \frac{-4}{-2}$$

$$\mathbb{R}: x \leq 2$$



Coupon 1
20% off

Coupon 2
\$10 off

Shirt \rightarrow \$100.

Coupon 1: Price now is \$80

Coupon 2: Price now is \$70

Coupon 2: Price is now \$90 20% off \rightarrow \$72

Coupon 1: Price is now \$72. \$18

$$f(x) = 2x + 1$$

$$g(x) = x + 10$$

(10) $f(g(2))$

$$g(2) = 2 + 10 = 12$$

$$\begin{aligned} f(12) &= 2(12) + 1 \\ &= 25 \end{aligned}$$

(11) $g(f(2))$

$$f(2) = 2 \cdot 2 + 1 = 5$$

$$\begin{aligned} g(5) &= 5 + 10 \\ &= 15 \end{aligned}$$

$$f(x) = 3x - 1$$

$$g(x) = 2x + 10$$

$$h(x) = x^2$$

(12) $f(h(g(-3)))$

$$\begin{aligned} g(-3) &= 2(-3) + 10 \\ &= 4 \end{aligned}$$

$$f(h(4))$$

$$\begin{aligned} h(4) &= 4^2 \\ &= 16 \end{aligned}$$

$$\begin{aligned} f(16) &= 3 \cdot 16 - 1 \\ &= 47 \end{aligned}$$

10-2-19 3rd Trig

Domain: x values we can use

Give the domain of what
asks you would date?

Can you give me an equation
where domain is all real
numbers except $x \neq 5$.

$$f(x) = \frac{2}{x-5}$$

$$f(x) = \frac{2(2x-7)}{5-x}$$

$$f(x) = \frac{\quad}{10x-50} \quad \leftarrow \text{top never matters}$$

① Give domain for $f(x) = \frac{88x-1}{x+7}$

Domain \mathbb{R} except $x \neq -7$

② Domain of $f(x) = \frac{x^{100}}{3x-2} \neq 0$

$$\frac{x^{100}}{3x-2} \neq 0$$
$$\frac{x^{100}}{3} \neq \frac{2}{3}$$

\mathbb{R} except $x \neq \frac{2}{3}$

③ Domain of $f(x) = x^2 - 6$.
 \mathbb{R}

④ Domain of $f(x) = 2x - 4$
 \mathbb{R}

⑤ Domain of $f(x) = \frac{x+10}{2x-1}$

$$\begin{array}{r} 2x-1 \neq 0 \\ \hline +1 \quad +1 \\ \hline 2x \neq 1 \\ \hline x \neq \frac{1}{2} \end{array}$$

\mathbb{R} except $x \neq \frac{1}{2}$

Give real life domain situation

of a.) ages 18 or older

b.) ages 21 or older

c.) ages 25 or older

d.) ages 40 or older

⑥ What is domain of

$$f(x) = \sqrt{x-3} \geq 0$$

$\mathbb{R}: x \geq 3$

⑦ Domain of $f(x) = \sqrt{2x-40}$

$$\begin{array}{r} 2x-40 \geq 0 \\ \hline +40 \quad +40 \\ \hline 2x \geq 40 \\ \hline x \geq 20 \end{array}$$

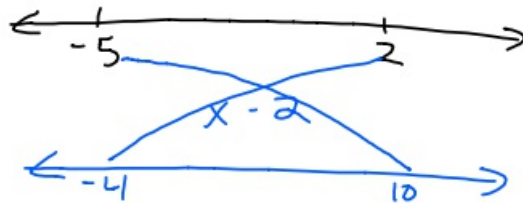
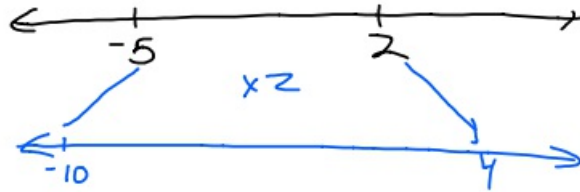
$\mathbb{R}: x \geq 20$

⑧ Domain of $f(x) = \sqrt{-2x-6}$

$$\begin{array}{r} -2x-6 \geq 0 \\ +6 \quad +6 \\ \hline \end{array}$$

$$\begin{array}{r} -2x \geq 6 \\ -2 \quad -2 \\ \hline \end{array}$$

$$x \leq -3$$



⑨ Domain of $f(x) = 4x - 12$
 \mathbb{R}

Coupon 1
\$10 off

Coupon 2
20% off

Shirt \$100

Coupon 1: Shirt now \$90

Coupon 2: 20% off Now it is \$72.

20% of 90
18

Coupon 2: Shirt now \$80

Coupon 1: Shirt now \$70

$$\textcircled{10} \quad f(x) = 3x - 2 \quad g(x) = 5x + 1$$

$$f(g(2))$$



$$f(11) = 3 \cdot 11 - 2 = 31$$

$$g(2) = 5 \cdot 2 + 1 = 11$$

$$\textcircled{11} \quad f(x) = 5x \quad g(x) = x^2 \quad h(x) = x - 1$$

$$g(f(h(3)))$$



$$g(f(2))$$



$$g(10) = 10^2 = 100$$

$$h(3) = 3 - 1 = 2$$

$$f(2) = 5 \cdot 2 = 10$$

$\textcircled{12}$ Give domain of each

$$\text{a.) } f(x) = \frac{5}{2x-1} \quad \begin{array}{l} 2x-1 \neq 0 \\ \mathbb{R} \text{ except } x \neq \frac{1}{2} \end{array}$$

$$\text{b.) } f(x) = 3x^2 - 1 \quad \mathbb{R}$$

$$\text{c.) } f(x) = \sqrt{\frac{x-10}{+10} \geq 0} \quad \mathbb{R}: x \geq 10$$