

Functions Worksheet 2 - Answers

1. If the function $f(n)$ represents the number of man hours required to construct n pizzas at dinner time at the local delivery joint, what domain makes sense?
Domain: $n \geq 0$.
2. Find the domain of the function $g(x) = \frac{1}{\sqrt{x-2}}$.
Domain: $x > 2$.
3. If a tree grows a inches each year, and the total height of the tree is $f(n)$, where n is the number of years, write an equation for $f(n)$.
 $f(n) = a \times n$, assuming initial height of the tree is 0.
4. A tree has two periods of linear growth. First, it grows from $H = 0$ to H_{min} at a_1 inches per year. Then it grows slower, at a rate of a_2 inches per year until it reaches H_{max} , after which it levels off. What domains make sense for each rate?
For rate a_1 , the domain is $0 < n < n_{H_{min}}$. Upon reaching rate a_2 , the domain is $n_{H_{min}} < n < n_{H_{max}}$, and the constant height (H_{max}) occurs after $n > n_{H_{max}}$.
5. Find the domain of the function $f(x) = \frac{5x}{10x^2-3x-1}$.
Domain: All real numbers except $x = \frac{1}{2}$ and $-\frac{1}{5}$.
6. If your bank account balance decreases by r_d for each day of vacation time and $b(d) = b_0 - r_d d$, where b_0 is the initial balance, identify the domain of days d that allows you to come home to a positive balance.
Balance is 0 when the number of days is: $d = \frac{b_0}{r_d}$ and the domain is $0 < d < \frac{b_0}{r_d}$.
7. You can hike $f(n)$ miles after building up n days of stamina. Identify the domain that makes sense.
Domain: $n \geq 0$.
8. Your cell phone plan charges you \$0.20 for each text message you send. Your parents put a cap of \$50 on your texting bill every month. If $c(t) = 0.2t$ is the cost of the total number of texts you send per month t , what is the domain of the function?
Domain: $0 \leq t \leq 250$ where t is an integer.
9. As part of a weight loss plan, your average Calories consumed per day, denoted as c , is measured to calculate how much weight you'll lose. If you're losing weight consistently, what is the domain of the function?
Domain: $c \leq 0$
10. Aliens land on Planet Earth and estimate a total of 7 billion people in the world. They can choose to help humans overpopulate the world or destroy everyone on the planet. What is the domain of people p can they add or remove from the world?
Ans: Domain: $p \geq -7,000,000,000$.

