Evaluating Functions, Finding the Domain and Difference Quotient

1. Evaluate the function at each value and simplify.

a) $f(x) = 5x - 2$

$f(3) =$

$f(x+2) =$

b) $f(x) = x^2 - 2x$

$f\left(\frac{3}{2}\right) =$

$f(x+2) =$

c) $f(x)=\begin{cases} x^2+2, & x\le 1 \\ 2x^2-1, & x>1 \end{cases}$

$f(-2)=$ $f(1)=$ $f(2)=$

<u>Domain</u> - the set of allowable x values

Restrictions

Fraction	Even Root
Denominator $\neq$ 0	Radicand $\geq$ 0
$\dfrac{1}{x+2}$	$\sqrt{x+2}$

2. Find the domain of each function.

a) $f(x) = 2x^3 + 1$

b) $f(x) = \dfrac{x}{2x+1}$

c) $f(x) = \dfrac{x+1}{x^2 - 1}$

d) $f(x) = \sqrt{x+1}$

e) $f(x) = \sqrt[3]{x+1}$

f) $f(x) = \dfrac{\sqrt{x+2}}{x-5}$

g) $f(x)=\sqrt{x^2+1}$

h) $f(x)=\dfrac{x+7}{\sqrt{2x-10}}$

<u>Difference Quotient</u>

$$\frac{f(x+h)-f(x)}{h}$$

3. Find the difference quotient and simplify your answer.

a) $f(x)=2x-1$

b) $f\left(x\right)=x^2-3$

c) $f\left(x\right)=\frac{1}{x}$