

Find the domain of the following functions:

1) $f(x) = 4x^2 + 7x - 12$

\mathbb{R}

$D: (-\infty, \infty)$

2) $f(x) = \frac{4}{x-7}$

$x-7=0$

$D: x \neq 7$

$D: (-\infty, 7) \cup (7, \infty)$

3) $f(x) = \frac{4x-7}{x^2+6x-7}$

$D: (-\infty, -7) \cup (-7, 1) \cup (1, \infty)$

$x^2 + 6x - 7 = 0$

$(x+7)(x-1) = 0$

$x = -7 \quad x = 1$

$D: x \neq -7, 1$

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

num
 $x-1 \geq 0$
 $x \geq 1$

denom
 $x^2 - 2x + 1 = 0$
 $(x-1)(x-1) = 0$
 $x > 1$

$D: x > 1$

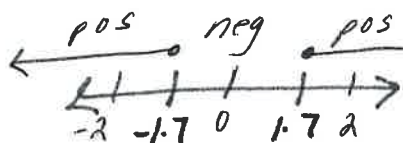
$D: (1, \infty)$

5) $f(x) = \sqrt{x^2-3}$ $\sqrt{0^2-3} = \sqrt{-3}$

$x^2 - 3 = 0$

$x^2 = 3$

$x = \pm\sqrt{3} \approx 1.7$



$D: (-\infty, \sqrt{3}] \cup [\sqrt{3}, \infty)$

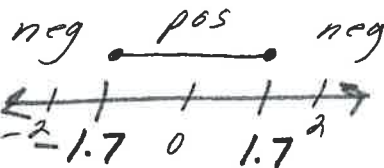
6) $f(x) = \sqrt{3-x^2}$

$3-x^2 = 0$

$3 = x^2$

$x = \pm\sqrt{3}$

$x \approx 1.7$



$\sqrt{3-0^2} = \sqrt{3}$

$D: [-\sqrt{3}, \sqrt{3}]$

7) $f(x) = \sqrt{x^2+5}$

$D: \mathbb{R}$ $D: (-\infty, \infty)$

x^2+5 will never be negative

8) $f(x) = \frac{1}{x} + \frac{4}{x+8}$

$x = 0$

$x+8 = 0$

$D: x \neq 0, -8$

$D: (-\infty, -8) \cup (-8, 0) \cup (0, \infty)$

9) $f(x) = \frac{1}{\sqrt{x+4}}$

$x+4 > 0$

$D: x > -4$

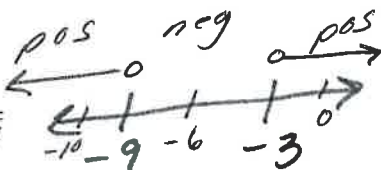
$D: (-4, \infty)$

10) $f(x) = \frac{14}{\sqrt{x^2+12x+27}}$

$x^2 + 12x + 27 = 0$

$(x+9)(x+3) = 0$

$x = -9, -3$



$\sqrt{0^2+12(0)+27} = \sqrt{27}$

$D: (-\infty, -9) \cup (-3, \infty)$