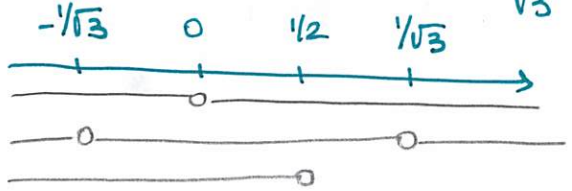
Solutions

Restrictions on Logarithms – Extra Practice

1) $log_{3x^2}(1-2x)$

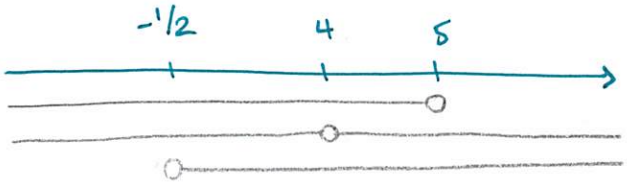
- $3x^2 > 0$ → $x \neq 0$
- $3x^2 \neq 1$ → $x^2 \neq \frac{1}{3}$ → $x \neq \pm\frac{1}{\sqrt{3}}$
- $1-2x > 0$ → $-2x > -1$ → $x < \frac{1}{2}$



$D = (-\infty, -\frac{1}{\sqrt{3}}) \cup (-\frac{1}{\sqrt{3}}, 0) \cup (0, \frac{1}{2})$

2) $log_{5-x}(2x+1)$

- $5-x > 0$ → $x < 5$
- $5-x \neq 1$ → $x \neq 4$
- $2x+1 > 0$ → $x > -\frac{1}{2}$

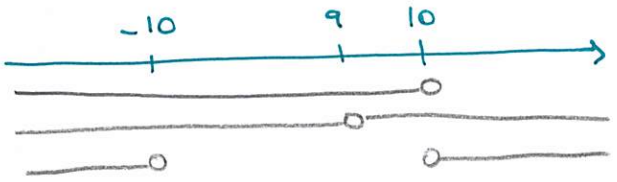


$D = (-\frac{1}{2}, 4) \cup (4, 5)$

3) $log_{-x+10}(x^2-100)$

- $-x+10 > 0$ → $x < 10$
- $-x+10 \neq 1$ → $x \neq 9$
- $x^2 - 100 > 0$

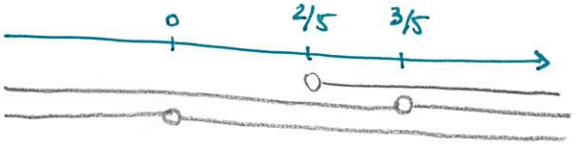
$x < -10$ or $x > 10$



$D = (-\infty, -10)$

4) $log_{5x-2}\,5x^2$

- $5x-2 > 0$ → $x > \frac{2}{5}$
- $5x-2 \neq 1$ → $x \neq \frac{3}{5}$
- $5x^2 > 0$ → $x \neq 0$



$D = (\frac{2}{5}, \frac{3}{5}) \cup (\frac{3}{5}, +\infty)$

SOLUTIONS :

1) $]-\infty,-\frac{1}{\sqrt{3}}[\cup]-\frac{1}{\sqrt{3}},0[\cup]0,\frac{1}{2}[$

2) $]-\frac{1}{2},4[\cup]4,5[$

3) $]-\infty,-10[$

4) $]\frac{2}{5},\frac{3}{5}[\cup]\frac{3}{5},\infty[$