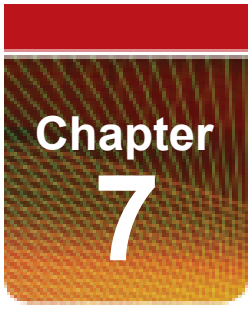


Chapter 7
PRACTICE TEST

Assignment

Complete pg. 413

Questions 1, 2, 6, 7

Solutions

1. The value of the expression $|-9-3|-|5-2^3|+|-7+1-4|$ is . . .

$\Rightarrow |-9-3|-|5-2^3|+|-7+1-4|$
$= |-12|-|5-8|+|-6-4|$
$= 12-|-3|+|-10|$
$= 12-3+10$
$= 9+10$
$= 19$

CHOICE: A

2. The range of the function $f(x)=|x-3|$ is . . .

Range: $\{y \mid y \geq 0, y \in R\}$

CHOICE: D

Solutions

Short Answer

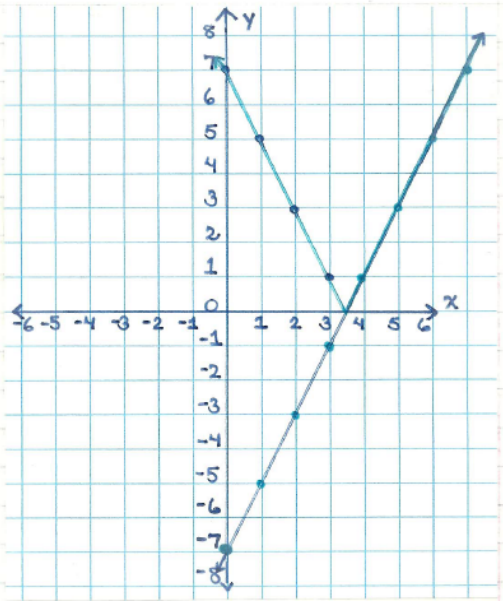
6. Consider the function $f(x) = |2x-7|$.

a) Sketch the graph of the function.

$\Rightarrow y = 2x-7$

$m = \frac{2}{1}$ (up / over)

y-int $= -7$



b) Determine the intercepts.

To find x-int, let $y = 0$:

$\Rightarrow y = 2x-7$

$0 = 2x-7$

$\frac{7}{2} = \frac{2x}{2}$

$\frac{7}{2} = x$

x-int: $\frac{7}{2}$ or 3.5

y-int: -7 (From Above).

c) State the domain and range.

Domain: $\{x \mid x \in R\}$

Range: $\{y \mid y \geq 0, y \in R\}$

d) What is the piecewise notation form of the function.

$$y = \begin{cases} 2x-7, & x \geq 7/2 \\ -(2x-7), & x < 7/2 \end{cases}$$

Solutions

7. Solve the equation $|3x^2-x|=4x-2$ algebraically.

$\Rightarrow |3x^2-x|=4x-2$

$3x^2-x=0$
$x(3x-1)=0$
$x=0$ or $3x-1=0$
$\frac{3x}{3}=\frac{1}{3}$
$x=\frac{1}{3}$

$|3x^2-x|=\begin{cases} 3x^2-x, & x\le 0 \text{ or } x\ge 1/3 \\ -(3x^2-x), & 0<x<1/3 \end{cases}$

Case 1

$3x^2-x=4x-2$
$3x^2-x-4x+2=0$
$3x^2-5x+2=0$
$a=3, b=-5, c=2$

$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$
$x=\frac{5\pm\sqrt{(-5)^2-4(3)(2)}}{2(3)}$
$x=\frac{5\pm\sqrt{25-24}}{6}$
$x=\frac{5\pm\sqrt{1}}{6}$
$x=\frac{5\pm 1}{6}$
$x=\frac{6}{6}=1$ or $x=\frac{4}{6}=\frac{2}{3}$

* Both $x=1$ and $x=2/3$ satisfy the condition $x\ge 1/3$.

Case 2

$-(3x^2-x)=4x-2$
$-3x^2+x=4x-2$
$0=3x^2+4x-x-2$
$0=3x^2+3x-2$
$a=3, b=3, c=-2$

$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$
$x=\frac{-3\pm\sqrt{(3)^2-4(3)(-2)}}{2(3)}$
$x=\frac{-3\pm\sqrt{9+24}}{6}$
$x=\frac{-3\pm\sqrt{33}}{6}$
$x=0.4574$ or $x=-1.4574$

* Neither $x=0.4574$ or $x=-1.4574$ satisfy the condition $0<x<1/3$.