Math 103 Professor Katiraie Quiz 7 Form B (20 Pts)

Name Solution

1) Find the domain of the following. Writer your answer in interval notation. (2 points each)

a) $g(x)=\sqrt{8-5x}$

$8-5x \geq 0$

$-5x \geq -8$

$x \leq \frac{8}{5}$

$(-\infty, \frac{8}{5}]$

b) $h(x)=\frac{1}{\sqrt{2x+1}}$

$2x+1>0$

$2x>-1$

$x>\frac{-1}{2}$

$(-\frac{1}{2}, \infty)$

2) Simplify the following expressions: (2 points each)

a) $\frac{15\sqrt{8}}{4}-\frac{2\sqrt{2}}{5}$

$= \frac{15 \cdot 2\sqrt{2}}{4} - \frac{2\sqrt{2}}{5}$

$= \frac{15\sqrt{2}}{2} - \frac{2\sqrt{2}}{5}$

$= \frac{75\sqrt{2}-4\sqrt{2}}{10} = \frac{71\sqrt{2}}{10}$

b) $2\sqrt[4]{64}-\sqrt[4]{324}+\sqrt[4]{4}$

$= 2\sqrt[4]{16}\sqrt[4]{4} - \sqrt[4]{81}\sqrt[4]{4} + \sqrt[4]{4}$

$= 2(2)\sqrt[4]{4} - 3\sqrt[4]{4} + \sqrt[4]{4}$

$= 4\sqrt[4]{4} - 3\sqrt[4]{4} + \sqrt[4]{4}$

$= 2\sqrt[4]{4} = 2\sqrt{2}$

c) $5\sqrt[3]{\frac{n^4}{125}}-2\sqrt[3]{n}$

$5\,\frac{\sqrt[3]{n^3}\sqrt[3]{n}}{\sqrt[3]{125}} - 2\sqrt[3]{n}$

$\frac{5\,n\sqrt[3]{n}}{5} - 2\sqrt[3]{n}$

$= (n-2)\sqrt[3]{n}$ or $n\sqrt[3]{n}-2\sqrt[3]{n}$

d) $\sqrt{64x^3}-\sqrt{x}+3\sqrt{x}$

$= 8x\sqrt{x} - \sqrt{x} + 3\sqrt{x}$

$= 8x\sqrt{x} + 2\sqrt{x}$

3. Solve the following equations: (2 points each)

a) $(4-2x)^2 = 100$

$4-2x = \pm 10$

$4-2x = 10$ OR $4-2x = -10$

$-2x = 6$ $-2x = -14$

$\boxed{x = -3}$ $\boxed{x = 7}$

b) $2t^3 = -128$ Divide Both sides by 2

$t^3 = -64$ Now Take Cube Root of Both sides

$t = \sqrt[3]{-64}$

$\boxed{t = -4}$

4. Multiply and simplify (2 points each)

a) $(3+2\sqrt{3})(4-3\sqrt{3})$

$12 - 9\sqrt{3} + 8\sqrt{3} - 6(3)$

$= 12 - \sqrt{3} - 18$

$= -6 - \sqrt{3}$

b) $(\sqrt{x}-7)(\sqrt{x}+8)$

$= x + 8\sqrt{x} - 7\sqrt{x} - 56$

$= x + 1\sqrt{x} - 56$