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MAC 1105.1A26
Cyr

Quiz 5

You must show all work to receive full credit!!

Problem 1. (2 pts) Solve the equation $\frac{2x-3}{x} + \frac{5x}{x-1} = 7$. Domain: $x \neq 0, 1$
LCD: $x(x-1)$

$$\frac{(2x-3)\cancel{x}(x-1)}{\cancel{x}} + \frac{5x \cdot \cancel{x}(x-1)}{\cancel{x-1}} = 7 \cdot x(x-1)$$

$$(2x-3)(x-1) + 5x^2 = 7x^2 - 7x \Rightarrow 2x^2 - 5x + 3 + 5x^2 = 7x^2 - 7x$$

$$\Rightarrow 7x^2 - 5x + 3 = 7x^2 - 7x \Rightarrow 2x + 3 = 0 \Rightarrow 2x = -3$$

$$\Rightarrow \boxed{x = -\frac{3}{2}} \quad (\text{solution since it is in domain})$$

Problem 2. (2 pts) Solve the equation $\sqrt{3x+6} = x-4$.

$$(\sqrt{3x+6})^2 = (x-4)^2$$

$$\Rightarrow 3x+6 = x^2 - 8x + 16$$

$$\Rightarrow 0 = x^2 - 11x + 10$$

$$\Rightarrow 0 = (x-10)(x-1)$$

$$\Rightarrow x=10 \text{ or } x=1$$

Check!

$$x=10: \sqrt{3(10)+6} \stackrel{?}{=} 10-4$$

$$\sqrt{30+6} = 6$$

$$\sqrt{36} = 6 \quad \checkmark$$

$$x=1: \sqrt{3(1)+6} \stackrel{?}{=} 1-4$$

$$\sqrt{3+6} = -3$$

$$\sqrt{9} = -3 \quad \times$$

$$\boxed{x=10}$$

Problem 3. (1 pt) Solve the equation $|4x-1| = 3$.

$$4x-1 = 3$$

or

$$4x-1 = -3$$

$$4x = 4$$

$$4x = -2$$

$$\boxed{x = 1}$$

or

$$\boxed{x = -\frac{1}{2}}$$