

Math 95
Quiz 6

Key

$$1) \frac{\left(8 + \frac{8}{d}\right)d}{\left(1 + \frac{1}{d}\right)d} = \frac{8d + 8}{d + 1} = \frac{8(d+1)}{d+1} = 8$$

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$$2) \frac{x^2 - x - 12}{x^2 + 8x + 12} \cdot \frac{x^2 - 2x - 15}{x^2 - 5x - 14} = \frac{(x-4)(x+3)}{(x-5)(x+3)} \cdot \frac{(x-4)(x-1)}{(x+6)(x+2)} = \frac{(x-4)(x-1)}{(x-5)(x+6)}$$

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$$3) \frac{x}{3} - \frac{x}{4} = 12$$

$$\text{LCD} = 12$$

$$\text{Domain} = \{x \in \mathbb{R}\}$$

$$12 \left(\frac{x}{3} - \frac{x}{4} \right) = 12(12)$$

$$4x - 3x = 144$$

$$\boxed{x = 144}$$

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$$4) \frac{y+3}{y+2} - \frac{y}{y^2-4} = \frac{y}{y-2}$$

$$\text{Domain} = \{x \in \mathbb{R} \mid x \neq 2, -2\}$$

$$\text{LCD} = (y-2)(y+2)$$

$$(y-2)(y+2) \left[\frac{y+3}{y+2} - \frac{y}{(y-2)(y+2)} \right] = \frac{y}{y-2} [(y-2)(y+2)]$$

$$(y+3)(y-2) - y(1) = y(y+2)$$

$$y^2 + y - 6 - y = y^2 + 2y$$

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$$y^2 + y - 6 = y^2 + 2y$$

$$-6 = 2y$$

$$-3 = y$$