

Name _____ ANSWERS _____

Math 138

Quiz 3 – Fall 2009

9/18/09

(6/1.5) 1. Find the real solution(s) of $x^6 - 64 = 0$.

$$x^6 = 64$$

$$x = \pm(64)^{1/6}$$

$$x = \pm 2$$

(30/1.5) 2. Find the real solution(s) of $2x - \sqrt{15 - 4x} = 0$.

$$2x = \sqrt{15 - 4x}$$

$$(2x)^2 = \sqrt{15 - 4x}^2$$

$$4x^2 = 15 - 4x$$

$$4x^2 + 4x - 15 = 0$$

$$(2x + 5)(2x - 3) = 0 \quad \text{or use quadratic formula}$$

$$x = -5/2, 3/2$$

Last CHECK YOUR ANSWERS!

Only $x = 3/2$ works.

3. Find the real solution(s) of $(x^2 - 5)^{2/3} = 16$.

$$(x^2 - 5)^{2/3 \cdot 3/2} = 16^{3/2}$$

$$x^2 - 5 = 64$$

$$x^2 = 69$$

$$x = \pm\sqrt{69}$$

Last CHECK YOUR ANSWERS!

Both work.

(44/1.5) 4. Find the real solution(s) of $\frac{4}{x} - \frac{5}{3} = \frac{x}{6}$.

The least common multiple of $x, 3, 6$ is $6x$. Multiply both sides by that:

$$(6x)\frac{4}{x} - (6x)\frac{5}{3} = (6x)\frac{x}{6}$$

$$24 - 10x = x^2$$

$$0 = x^2 + 10x - 24$$

$$0 = (x - 2)(x + 12)$$

$$x = 2, -12$$

Last CHECK YOUR ANSWERS!

Both work.