Numberbender Algebra Review

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Name: _____ Date: _____ Score: / 16

Section 1: Inverse of a Function

1. Find the inverse function:

$$f(x) = 3x + 6$$

Answer: _____

2. Find the inverse function:

$$f(x) = \frac{x - 2}{5}$$

Answer: _____

3. Find the inverse function:

$$f(x) = 2x - 7$$

Answer: _____

4. Find the inverse function:

$$f(x) = x^3 + 1$$

Answer: _____

Section 2: Classifying Polynomials

5. Classify by degree and number of terms:

$$4x^3 - 2x + 1$$

Answer: _____

6. Classify by degree and number of terms:

$$7x^2$$

Answer: _____

7. Classify by degree and number of terms:

$$5x^4 + 3x^2 - x + 2$$

Answer: _____

8. Classify by degree and number of terms:

$$-9$$

Answer: _____

Section 3: Rationalizing Radicals

9. Rationalize the denominator:

$$\frac{1}{\sqrt{3}}$$

Answer: _____

10. Rationalize the denominator:

$$\frac{5}{\sqrt{7}}$$

Answer: _____

11. Rationalize the denominator (use the conjugate):

$$\frac{3}{\sqrt{5}-2}$$

Answer: _____

12. Rationalize the denominator:

$$\frac{2+\sqrt{3}}{\sqrt{3}}$$

Answer: _____

Section 4: Simplifying Rational Expressions

13. Simplify. State any restrictions on x:

$$\frac{x^2-9}{x-3}$$

Answer: _____

14. Simplify. State any restrictions on x:

$$\frac{x^2+5x+6}{x+2}$$

Answer: _____

15. Simplify. State any restrictions on x:

$$\frac{2x^2 - 8}{x^2 - 4}$$

Answer: _____

16. Simplify. State any restrictions on x:

$$\frac{x^2 + x - 6}{x^2 - 4}$$

Answer: _____

Numberbender Algebra Review — Answer Key

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Section 1: Inverse of a Function

1. Find the inverse function:

$$f^{-1}(x) = \frac{x - 6}{3}$$

2. Find the inverse function:

$$f^{-1}(x) = 5x + 2$$

3. Find the inverse function:

$$f^{-1}(x) = \frac{x + 7}{2}$$

4. Find the inverse function:

$$f^{-1}(x) = \sqrt[3]{x - 1}$$

Section 2: Classifying Polynomials

5. Classify by degree and number of terms:

Degree: 3 (cubic), Terms: 3 (trinomial)

6. Classify by degree and number of terms:

Degree: 2 (quadratic), Terms: 1 (monomial)

7. Classify by degree and number of terms:

Degree: 4 (quartic), Terms: 4 (polynomial)

8. Classify by degree and number of terms:

Degree: 0 (constant), Terms: 1 (monomial)

Section 3: Rationalizing Radicals

9. Rationalize the denominator:

$$\frac{\sqrt{3}}{3}$$

10. Rationalize the denominator:

$$\frac{5\sqrt{7}}{7}$$

11. Rationalize the denominator (use the conjugate):

$$3\sqrt{5}+6$$

12. Rationalize the denominator:

$$\frac{2\sqrt{3}}{3}+1$$

Section 4: Simplifying Rational Expressions

13. Simplify. State any restrictions on x:

$$x+3, \quad x \neq 3$$

14. Simplify. State any restrictions on x:

$$x+3, \quad x \neq -2$$

15. Simplify. State any restrictions on x:

$$2, \quad x \neq \pm 2$$

16. Simplify. State any restrictions on x:

$$\frac{x+3}{x+2}, \quad x \neq \pm 2$$