Algebra: Describing the Domain and Range

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Name: _____ Date: _____ Score: _____

DIRECTIONS *Identify the domain and range of each function. Write using set notation or interval notation.*

1 Find D & R:

$f(x) = 2x + 1$

Answer: _____

2 Find D & R:

$f(x) = x^2$

Answer: _____

3 Find D & R:

$f(x) = 1/x$

Answer: _____

4 Find D & R:

$f(x) = \sqrt{x}$

Answer: _____

5 Find D & R:

$f(x) = \sqrt{x-3}$

Answer: _____

6 Find D & R:

$f(x) = 1/(x-2)$

Answer: _____

7 Find D & R:

$f(x) = x^2 - 4$

Answer: _____

8 Find D & R:

$f(x) = |x|$

Answer: _____

9 Find D & R:

$f(x) = 3/(x^2-9)$

Answer: _____

10 Find D & R:

$f(x) = \sqrt{4-x}$

Answer: _____

Answer Key & Solutions

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TEACHER NOTES *Domain: all valid x-inputs. Range: all resulting y-outputs. Avoid division by zero and negatives under even radicals for domain.*

1 f(x) = 2x + 1

= D: all reals, R: all reals

Linear — no restrictions

2 f(x) = x^2

= D: all reals, R: y >= 0

Parabola — any x, output always >= 0

3 f(x) = 1/x

= D: x ≠ 0, R: y ≠ 0

Undefined at x=0; output never 0

4 f(x) = sqrt(x)

= D: x >= 0, R: y >= 0

Need x >= 0 under radical; output >= 0

5 f(x) = sqrt(x-3)

= D: x >= 3, R: y >= 0

x-3 >= 0, so x >= 3

6 f(x) = 1/(x-2)

= D: x ≠ 2, R: y ≠ 0

x-2 ≠ 0, so x ≠ 2

7 f(x) = x^2 - 4

= D: all reals, R: y >= -4

Vertex at (0,-4); parabola opens up

8 f(x) = |x|

= D: all reals, R: y >= 0

Absolute value never negative

9 f(x) = 3/(x^2-9)

= D: x ≠ ±3, R: y ≠ 0

x^2-9=0 when x=±3; exclude those

10 f(x) = sqrt(4-x)

= D: x <= 4, R: y >= 0

4-x >= 0, so x <= 4