Pre-Calculus/Trig 3 Name: _____
UNIT 1: Algebra II Review – PART ONE REVIEW Date: _____

ALGEBRA REVIEW

Directions: Write the equation of the line, given the following information.

1.) Parallel to $y = -2x + 5$ through $(3, 2)$

2.) Perpendicular to $2x - 3y = -5$ through $(-1, 4)$

Directions: Find all roots of the given polynomial equation.

3.) $10x^4 - 26x^3 = -12x^2$

4.) $12x^2 = 5x + 2$

5.) $x^3 - x^2 - 4x + 4 = 0$

6.) $x^4 - 1 = 0$

Directions: Simplify each expression.

7.) $(2a^4b) \cdot (2a^2b)^3$

8.) $(2r)^0$

9.) $3\sqrt{7} \cdot 6\sqrt{-21}$

10.) $(3 + 2i)(4 - 5i)$

11.) $\frac{2\sqrt{5}}{3\sqrt{2}}$

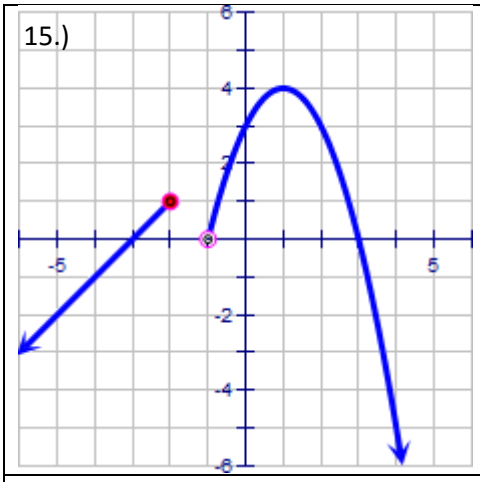
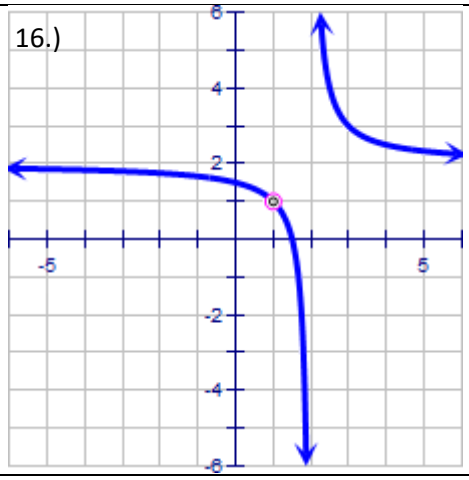
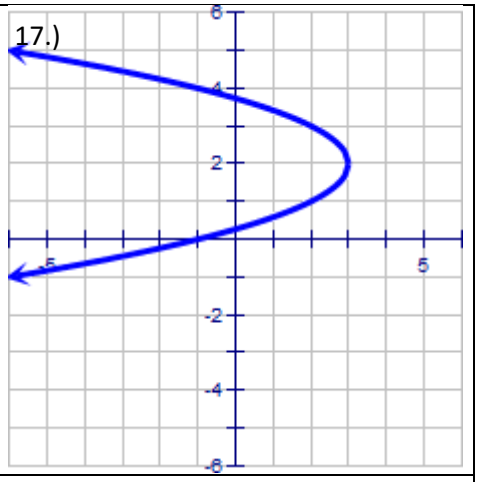
12.) $\frac{12x^6y^{-5}}{15x^2y^{-2}}$

13.) $\frac{x^3-2x^2-9x+18}{3x^2+14x+15}$

14.) $\frac{10x^3+19x^2+7x}{2x^3+x^2}$

DOMAIN & RANGE

Directions: Determine the domain and range of each graph using interval notation.

15.) 	16.) 	17.) 
DOMAIN:	DOMAIN:	DOMAIN:
RANGE:	RANGE:	RANGE:

Directions: State the domain of each function using interval notation.

18.) $f(x) = \frac{x^2-36}{7x+28}$

19.) $f(x) = \sqrt{2x-4}$

20.) $f(x) = \sqrt{x^2-x-42}$

21.) $f(x) = \frac{5x+1}{\sqrt{2x-3}}$

22.) $f(x) = x^3 + 2x^3 - x - 2$

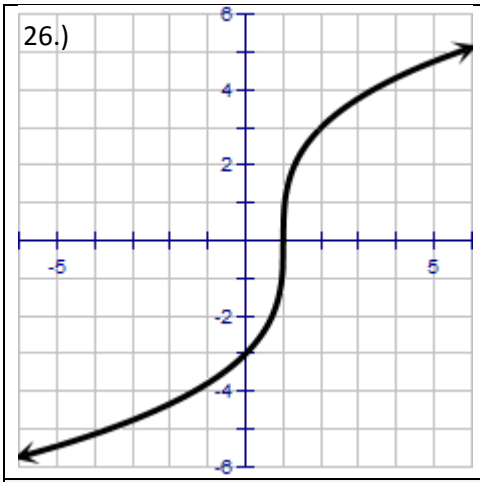
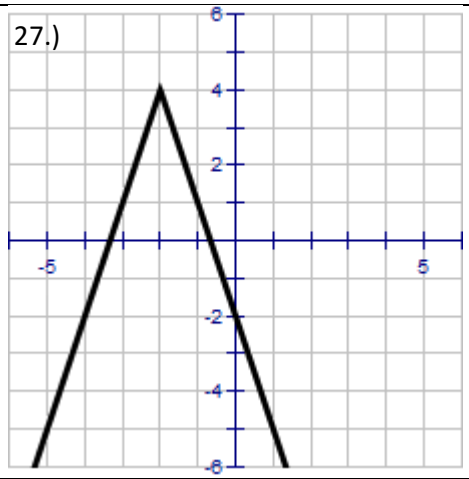
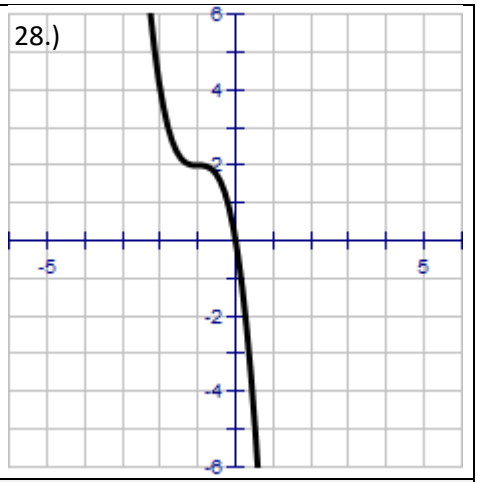
23.) $f(x) = \frac{1}{\sqrt{x^2-16x-36}}$

24.) $f(x) = \frac{8x-3}{x^2-5}$

25.) $f(x) = \frac{\sqrt{x+2}}{x^2-3x-4}$

GRAPHING TRANSFORMATIONS

Directions: Write an equation for each graph and describe the transformations.

26.) 	27.) 	28.) 
EQUATION	**EQUATION**	**EQUATION**
$f(x) =$ _____	$f(x) =$ _____	$f(x) =$ _____
DESCRIPTION	**DESCRIPTION**	**DESCRIPTION**

Directions: Given the equation, describe the transformations and graph each function.

29.)	30.)	31.)
EQUATION	**EQUATION**	**EQUATION**
$f(x) = \left(\frac{1}{2}x + 2\right)^2 - 5$	$f(x) = (-x + 1)^3 - 1$	$f(x) = \frac{1}{2x+6} + 2$
DESCRIPTION	**DESCRIPTION**	**DESCRIPTION**

Directions: Write an equation of the given transformations.

32.) $f(x) =$ _____ An absolute value function shifted horizontally to the right 4, shifted vertically down 5, with a horizontal shrink.

33.) $f(x) =$ _____ A cube root function shifted horizontally to the left 3, shifted vertically up 7, reflected over the y-axis with a vertical stretch.

34.) $f(x) =$ _____ A cubic function shifted horizontally to the left 8, shifted vertically down 2, with a vertical shrink and a horizontal shrink.

35.) $f(x) =$ _____ A quadratic function shifted vertically down 9, reflected over the x-axis with a horizontal stretch.

36.) $f(x) =$ _____ A square root function shifted horizontally to the right 2, shifted vertically up 6, reflected over the y-axis with a horizontal stretch.

Directions: Graph each piecewise function.

37.) $f(x) = \begin{cases} \sqrt{x+7} - 3, & x < -3 \\ 2x + 3, & -3 \leq x < 1 \\ (x-3)^2 - 5, & x \geq 1 \end{cases}$

38.) $f(x) = \begin{cases} (x+4)^3 - 3, & x \leq -2 \\ -|x-2| + 5, & -2 < x \leq 4 \\ -\sqrt{x-4} + 3, & x > 4 \end{cases}$