

PRECALCULUS UNIT 2 CHEAT SHEET

Parent Functions



Transformations

Transformation	Function	Description	Transformation	Function	Description
Horizontal Shift	$f(x + a)$	Shift left a units.	Vertical Stretch/Compress	$a \cdot f(x), a > 1$	Stretch vertically by a factor of a .
	$f(x - a)$	Shift right a units.		$a \cdot f(x), 0 < a < 1$	Compress vertically by a factor of a .
Vertical Shift	$f(x) + a$	Shift up a units.	Horizontal Stretch/Compress	$f(ax), a > 1$	Compress horizontally by a factor of $\frac{1}{a}$.
	$f(x) - a$	Shift down a units.		$f(ax), 0 < a < 1$	Stretch horizontally by a factor of $\frac{1}{a}$.
Reflection	$-f(x)$	Reflect across x-axis .			
	$f(-x)$	Reflect across y-axis .			

Power Functions

- Any function that can be written in exponent form
- Includes negative exponents
- Includes rational exponents
- Includes radicals!

Negative Exponents

- Flip the base with negative exponent
 - This means move from numerator to denominator and vice versa
- Drop the negative
- Keep everything else the same and multiply throughout

$$x^{-2} = \frac{1}{x^2}$$

Rational Exponents

- Rational = Ratio = Fraction
- $x^{\frac{\text{numerator}}{\text{denominator}}} = \text{root} \sqrt[\text{denominator}]{x^{\text{numerator}}}$
- President is on the inside of the oval office, secret service is outside
(President Secret)

$$x^{\frac{3}{2}} = \sqrt[2]{x^3}$$

Radical Functions

Solving Radicals

- Isolate the radical (get everything away from the radical [leave everything alone under the radical])
- Get rid of the radical (square cancels square root, cube cancels cube root, etc...)
- Finish solving for your variable
- CHECK FOR EXTRANEOUS SOLUTIONS

Example 1: Solve

$$\begin{aligned} a) \quad \frac{2\sqrt{x+1}}{2} &= \frac{4}{2} \\ \sqrt{x+1} &= 2 \\ (\sqrt{x+1})^2 &= 2^2 \\ x+1 &= 4 \\ x &= 3 \end{aligned}$$

Step 1: Isolate the radical on one side.

Step 2: Raise each side to the same power to eliminate the root.

Step 3: Solve the resulting equation.

Step 4: Check your answers for extraneous solutions.

$$\begin{aligned} 2\sqrt{x+1} &= 4 \\ 2\sqrt{3+1} &= 4 \\ 2\sqrt{4} &= 4 \\ 2(2) &= 4 \quad \checkmark \end{aligned}$$

Polynomial Behavior

	Degree is Even	Degree is Odd
Leading Term is Positive		
Leading Term is Negative		

- If n is the highest degree of a polynomial (largest exponent)
- Possible Rational Zeros
 - $\circ$ n
- Possible Turning Points
 - $\circ$ $n - 1$

Pre Cal Unit 5 2 Answer Key

Adrian Doff, Christopher Jones



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