

Chapter 7

Rules of Exponents

$a^1 = a$

$a^0 = 1$

$a^{-n} = \frac{1}{a^n}$

$a^n \cdot a^m = a^{n+m}$

$\frac{a^m}{a^n} = a^{m-n}$

$(a^m)^n = a^{mn}$

$(ab)^n = a^n b^n$

$(\frac{a}{b})^n = \frac{a^n}{b^n}$

$a^{m/n} = \sqrt[n]{a^m}$ or $\sqrt[n]{a^m}$
 Ex: $4^{1/2} = \sqrt{4} = 2$
 $3^4 = 81$

$\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{ab}$

$\frac{\sqrt[n]{a}}{\sqrt[n]{b}} = \sqrt[n]{\frac{a}{b}}$

Function Operations

$(f+g)(x) = f(x) + g(x)$

$(f-g)(x) = f(x) - g(x)$

$(f \cdot g)(x) = f(x) \cdot g(x)$

$\frac{f(x)}{g(x)} = (\frac{f}{g})(x)$

Solving Radical/Rational Exponent Eqs

- Isolate the radical/parentheses
- Raise each side to reciprocal power
- Solve and check quadratics

Graphing

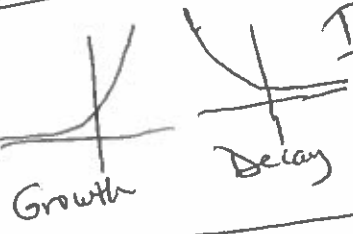
$y = (x \pm h) \pm k$
 Pull out opp sign (horizontal)
 Keep sign (vert.)

Composite

$(f \circ g)(x) = f(g(x))$
 $(g \circ f)(x) = g(f(x))$

Chapter 8 Exponential Functions

$y = ab^x$
 initial amount
 $b > 1$ growth
 $0 < b < 1$ decay



To graph:

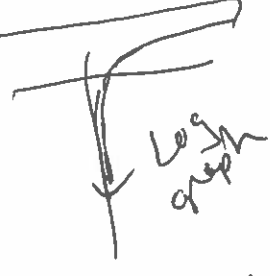
x	y
-2	
-1	
0	
1	
2	

General Growth: $y = A(1 \pm r)^t$
 A = initial amount
 r = rate in decimals
 t = time period

To graph logs:

- Change to exponential form
- Do table - solve for x

x	y
-2	
-1	
0	
1	
2	



Continuous Compounding: $y = Ae^{(rt)}$

Logs: If $b^x = y$, then $\log_b y = x$

Properties of logs

- $\log_b MN = \log_b M + \log_b N$
- $\log_b \frac{M}{N} = \log_b M - \log_b N$
- $\log_b M^x = x \log_b M$

Chapter 9

To simplify rational expressions: multiply or divide rational
 1) FACTOR
 2) CANCEL

Solving Exponential Eqs

- Take logs of both sides
- Solve for x

Solving Log Eqs

- Switch to exponential form
- Take logs of both sides
- Solve for x

DRIP - Direct \rightarrow Ratio Constant
 Direct: $\frac{y_1}{x_1} = \frac{y_2}{x_2}$
 $y = kx$

Inverse \rightarrow Product: \rightarrow constant
 Write functions:
 1) $k = xy$
 2) $y = \frac{k}{x}$
 $x_1 y_1 = x_2 y_2$