

1 Latex Reference

1.1 For Tests, Worksheets, and Notes

A **linear function** is a function of the form

$$f(x) = mx + b$$

1. Find the n^{th} dimension of the universe.

- a) 42
- b) the size of an atom
- c) “Money makes money. And the money that makes money makes money.”
–Benjamin Franklin
- d) stuff
- e) more stuff
- f)

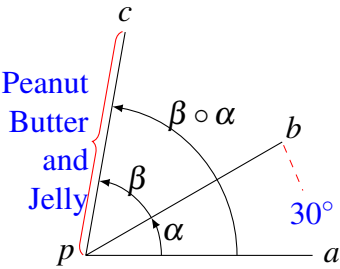
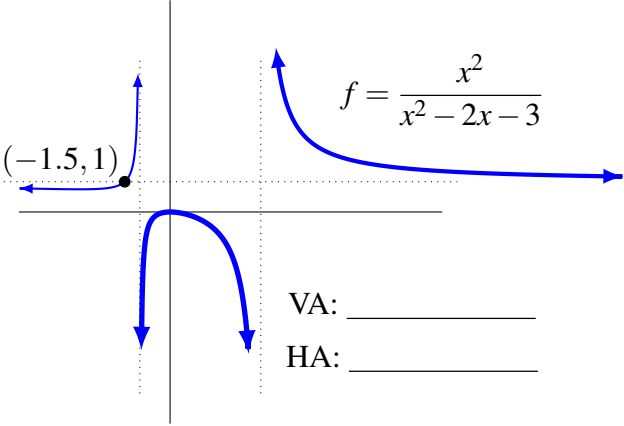
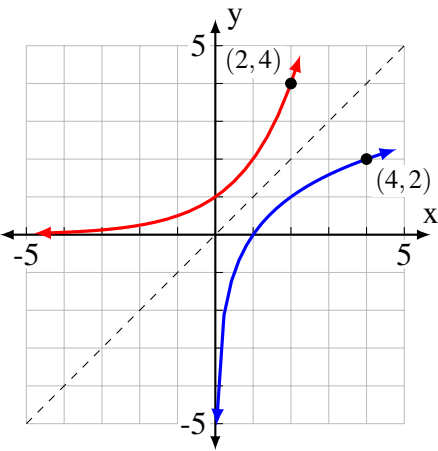
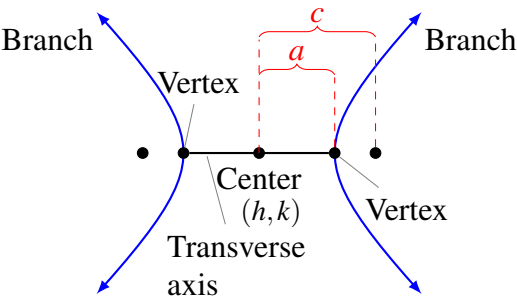
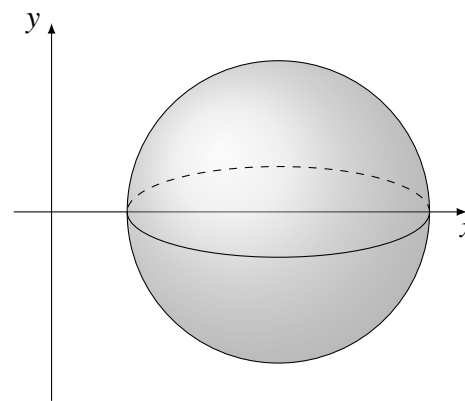
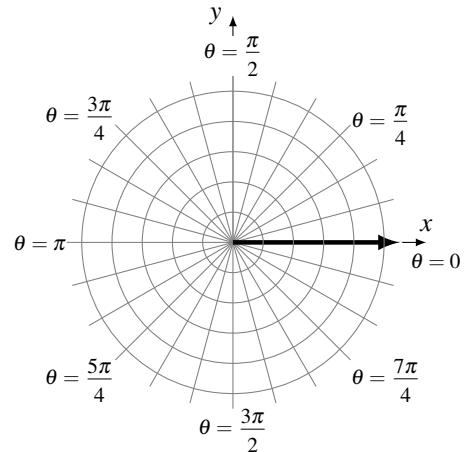
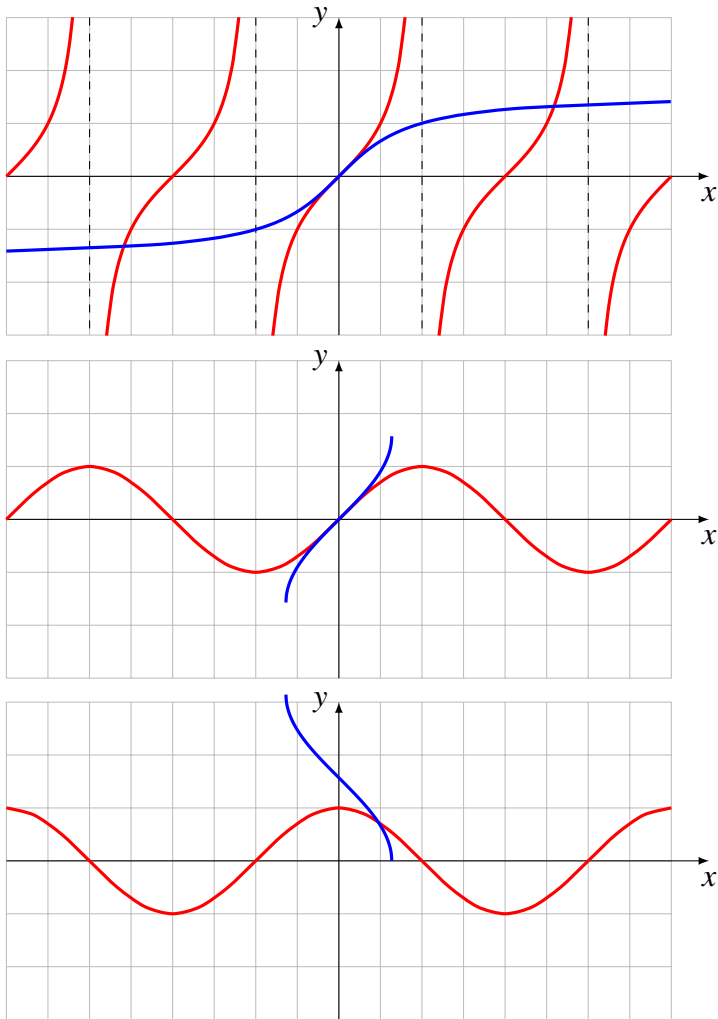


Figure 4.1





Finding the Volume of a Solid of Revolution by Slicing

- Step 1.** Sketch the plane region that is to be revolved, finding the points of intersection of bounding curves.
- Step 2.** On the sketch, draw a typical think rectangle perpendicular to the axis of revolution, that is, either perpendicular to the x -axis and of width Δx or perpendicular to the y -axis and of width Δy .
- Step 3.** *Looking at the sketch*, write down the volume V_{slice} of the slice swept out as the rectangle is revolved about the given axis. Express V_{slice} entirely in terms of the variable (x or y) appearing in the Δ -increment.
- Step 4.** Integrate between the appropriate (x or y) limits. (Geometrically, this amounts to adding the volumes found in step 3 and taking the limit of the resulting sum as $||$.)

True/False. Fill in the blank with T for true or F for false.

1. _____ $a^{\log_a M} = M$

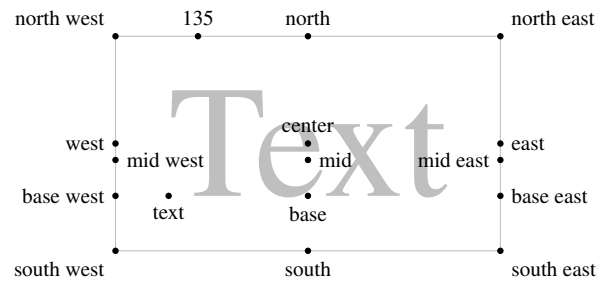
2. _____ $\log_a a^r = r$

3. _____ $\log_a(MN) = \log_a M + \log_a N$

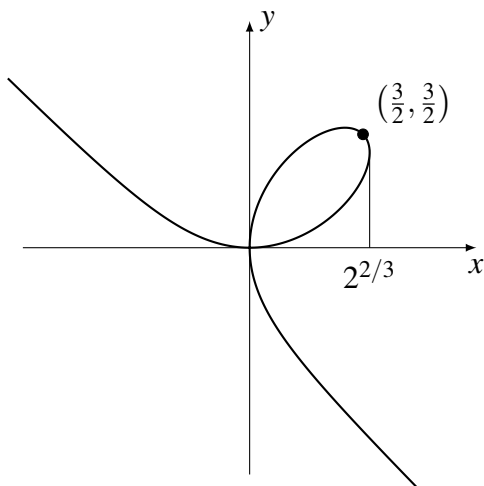
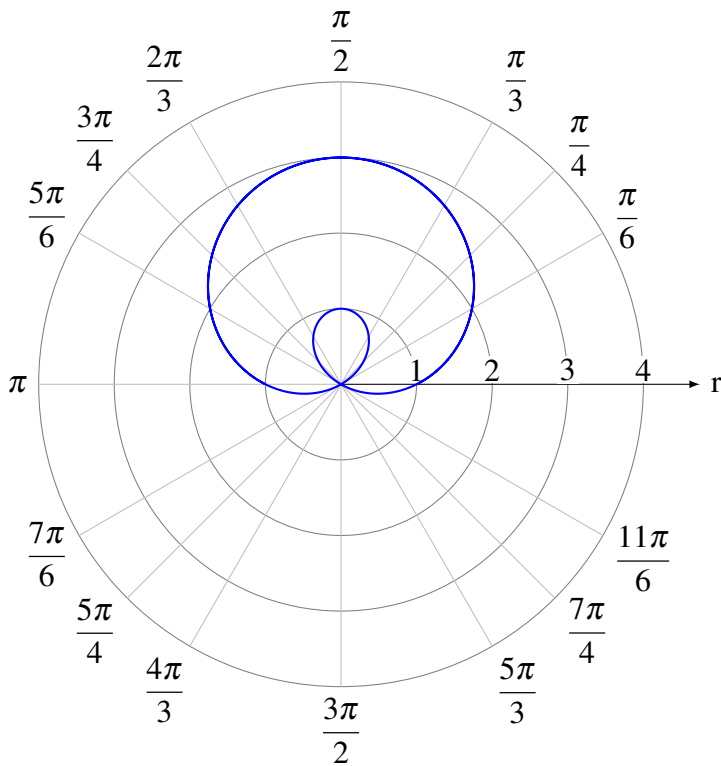
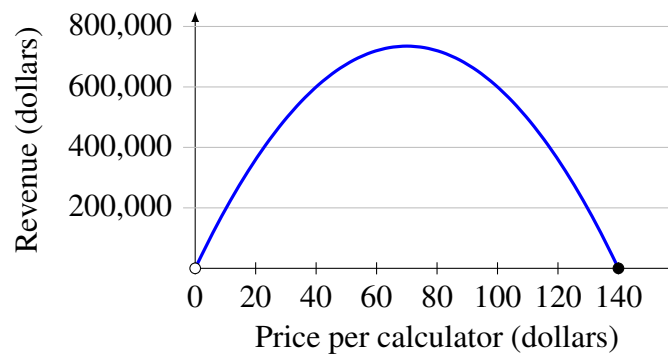
4. _____ $\log_a \left(\frac{M}{N} \right) = \log_a M + \log_a N$

5. _____ If $M = N$, then $\log_a M = \log_a N$

6. _____ $\log_a M^r = r \log_a M$



1.2 A few more examples



1.3 Tables

Environment	Code	Notes
array	<code>\begin{array}[pos]{cols}</code> rows <code>\end{array}</code>	use in math mode <code>\usepackage{array}</code>
tabular	<code>\begin{tabular}[pos]{cols}</code> rows <code>\end{tabular}</code>	use in text mode <code>\usepackage{array}</code>
tabular*	<code>\begin{tabular*}{width}[pos]{cols}</code> rows <code>\end{tabular*}</code>	width is space between columns <code>\usepackage{array}</code>
tabularx	<code>\begin{tabularx}{width}[pos]{cols}</code> rows <code>\end{tabularx}</code>	width is total table width <code>\usepackage{tabularx}</code> tabularx loads the array package

Quantity	Symbol	Unit	Value
Stiffness in z direction	k_z	N/m	2276
Stiffness in r direction	k_r	N/m	3414
Weight of the body	P	N	35

Force	Force is a vector quantity defined as the rate of change of the momentum of the body that would be induced by that force acting alone.
Moment of a force	Moment of a force with respect to an origin is defined as the cross product of the position vector (with respect to the same origin) and the force.

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1.4 Fonts, Size, Tiny Bullets, and Underlining

Groovy underlining and tiny bullets

- Tiny bullet size
- for the discrete itemizer

Command	Switch	Font Styles	Description
<code>\textnormal{}</code>	<code>\normalfont</code>	document font family	This is the default or normal font.
<code>\emph{}</code>	<code>\em</code>	<i>emphasis</i>	Typically italics. Using <code>\emph{}</code> inside of italic text removes the italics on the emphasized text.
<code>\textrm{}</code>	<code>\rmfamily</code>	roman font family	
<code>\textsf{}</code>	<code>\sffamily</code>	sans serif font family	
<code>\texttt{}</code>	<code>\ttfamily</code>	typewriter/teletype	This is a fixed-width or monospace font.
<code>\textup{}</code>	<code>\upshape</code>	upright shape	The same as the normal typeface.
<code>\textit{}</code>	<code>\itshape</code>	<i>italic shape</i>	
<code>\textsl{}</code>	<code>\slshape</code>	<i>slanted shape</i>	Similar to, but slightly different from, italics.
<code>\textsc{}</code>	<code>\scshape</code>	SMALL CAPITALS	
<code>\uppercase{}</code>		UPPERCASE(ALL CAPS)	
<code>\textbf{}</code>	<code>\bfseries</code>	bold	
<code>\textmd{}</code>	<code>\mdseries</code>	medium weight	The normal font weight.
<code>\lfseries{}</code>	<code>\lfseries</code>	light	Not supported by all typefaces.

abcdefghijklmnopqrstuvwxyz – width for Computer Modern at 12pt: 149.87622pt

abcdefghijklmnopqrstuvwxyz – width for Times New Roman at 12pt: 143.31483pt

abcdefghijklmnopqrstuvwxyz – width for Palatino at 12pt: 159.85011pt

1.5 pifont Quick Reference

```
\usepackage{pifont}
```

	0	1	2	3	4	5	6	7	8	9
0										
10										
20										
30				✂	✂	✂	✂	☎	🌀	👤
40	✈	✉	👊	👉	✌	✍	✍	✍	✍	👁
50	♣	✓	✓	✕	✕	✕	✕	✚	✚	✚
60	♣	†	†	†	⚔	☆	✚	✚	♣	✚
70	◆	◇	★	☆	⊛	☆	☆	☆	☆	☆
80	☆	✱	✱	✱	✱	✱	✱	✱	✱	✱
90	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱
100	✱	✱	✱	✱	✱	✱	✱	✱	●	○
110	■	□	□	□	□	▲	▼	◆	◇	◐
120			▬	‘	’	“	”			
130										
140										
150										
160		♪	♫	♫	♥	♣	♣	♣	♣	♣
170	♥	♠	①	②	③	④	⑤	⑥	⑦	⑧
180	⑨	⑩	①	②	③	④	⑤	⑥	⑦	⑧
190	⑨	⑩	①	②	③	④	⑤	⑥	⑦	⑧
200	⑨	⑩	①	②	③	④	⑤	⑥	⑦	⑧
210	⑨	⑩	➔	➔	↔	↕	↘	➔	↗	➔
220	➔	➔	➔	➔	➔	➔	➔	➔	➔	➔
230	➔	➔	➔	➔	➔	➔	➔	➔	➔	➔
240		➔	➔	➔	➔	➔	➔	➔	➔	➔
250	➔	➔	➔	➔	➔	➔	➔	➔	➔	➔

1.6 Awesome discussions and interweb pages

- [lengths in L^AT_EX](#)
- [margin length](#)
- [page sizes and margins](#)
- [the geometry package documentation](#)
- [writing your own package](#)
- [writing your own class](#)
- [intro for class and package writers](#)
- [good \(and simple?\) example of writing a class](#)
- [The L^AT_EX Companion, Second Edition](#)
- [detailed font help](#)
- [awesome underlining](#)
- [awesome guide to tables](#)