

Modeling Your Biorhythm

Name(s): _____

What are biorhythms?

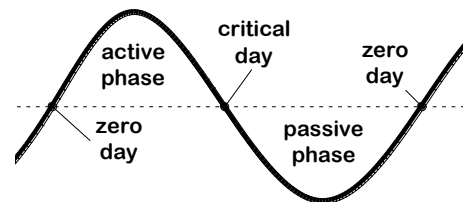
Many things in nature are periodic; the seasons, the daily change of temperature and light, etc. Presumably, we are influenced by these things in ways we cannot fathom. Scientists have discovered many biorhythms within our physiology; the beating of our heart, our natural sleep and waking cycle, etc. These cycles can influence things such as: immunity to disease, mental acuity, moods, etc.

However, there is also a pseudoscience that assumes a more general and far-reaching relationship between your birth date and your well being. In this realm it is assumed there are three biorhythm cycles: physical, emotional, and intellectual. Each cycle starts at the time of birth and continues throughout our lives.

Physical Biorhythm 23 day cycle	Controls: strength, stamina, immunity to disease, potency, coordination, resistance to pain <i>The physical cycle controls our energy, vitality, stamina, vigor, endurance and initiative. When our physical cycle is up, we are more likely to feel better, be full of energy, and less likely to become ill. When our physical cycle is down, we tend to tire more easily and are more apt to catch colds and other illnesses.</i>
Emotional Biorhythm 28 day cycle	Controls: mental stability, sensitivity, moods <i>The emotional cycle controls our sensitivity and temperament. When our emotional cycle is up, we are more likely to be cheerful, creative, artistic and sensuous. When this cycle is down, we are more likely to be moody, bad tempered, irritable and depressed.</i>
Intellectual Biorhythm 33 day cycle	Controls: ability to learn, memory, analytical thinking, logic, decision making <i>When it is up we think quickly, solve problems effectively, do well on tests and retain facts to memory. When it is down, we display poor memory and judgment. We may find it hard to concentrate. Poor decisions may be made during this period.</i>

Each cycle goes through the 4 stages shown here.

In the active phase the positive abilities of the particular cycle are enhanced and the negative aspects are diminished. In the passive phase the abilities are diminished and negative aspects are enhanced. The zeros are typical days of turmoil. However, the switching from active to passive phase is most critical and you should be especially careful on those days. Now let's compute our own biorhythm.



Let's assume each biorhythm is modeled by $y = A \sin(bt + c) + k$

Finding A and k

Assume the graph oscillates through 100% of your capability. That is, the maximum represents your positive attributes at 100% while the minimum represents your positive attributes at 0%.

A = _____

k = _____

This is true for all the biorhythm cycles.

Period

$bT = 2\pi$

Physical

Emotional

Intellectual

b = _____

b = _____

b = _____

Phase Shift

Your birthday is a zero day. Use that fact to find the c-value. $c =$ _____

Now we have our three cycles

Physical

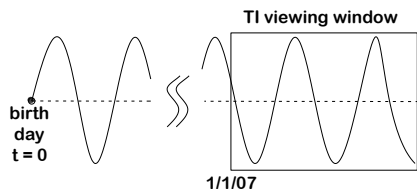
Emotional

Intellectual

$$Y_1 =$$

$$Y_2 =$$

$$Y_3 =$$



My friend had a baby (Max) on Oct 17, 2008. Find his biorhythms and plot them. When is his first critical day this year?

Create a new function $y = Y_1 + Y_2 + Y_3$ that will allow you to quickly find a triple critical day? Find his first triple-critical day.

BONUS

Suppose you want to model your own biorhythm for Nov, 2007. That requires we adjust our window relative to our own birthday. Use the chart below to determine your personal xmin-value. This value will be the same for each function. Why?

	1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun	1-Jul	1-Aug	1-Sep	1-Oct	1-Nov	1-Dec	31-Dec
Common Yr	1	32	60	91	121	152	182	213	244	274	305	335	365
Leap Yr	1	32	61	92	122	153	183	214	245	275	306	336	366

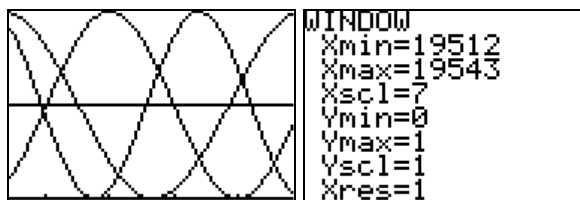
Leap yrs	1960	1964	1968	1972	1976	1980	1984	1988	1992	1996	2000	2004
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In the last 100 years, every year evenly divisible-by-4 has been a leap year.

Example: Birthdate: 9/29/53. Note: 1953 was a common year, 1956, 1960, etc were leap years.

9/29/53 to 10/1/53 = 3 days
 10/1/53 to 12/31/53 = 365 - 274 = 91 days
 366 × (# of leap years) = 366 × 13 = 4758 days
 365 × (# of common years) = 365 × 40 = 14600 days
 1/1/07 to 11/1/07 = 305 days

 total days to 11/1/2007 = 19,512 days
 xmin = 19,512 xmax = xmin + 31 (31 days in March)



Plot your 3 biorhythm cycles and find your next critical day.