# Errata for
# Feynman's Tips on Physics
# (1st printing)

These errata are collected from the 1st printing of *Feynman Tips on Physics: A Problem-Solving Supplement to The Feynman Lectures on Physics* published in 2005 by Addison-Wesley. (Some of these errors were corrected in the 2nd or 3rd printings - all were corrected in the 2006 4th printing).

Errors are listed in the order of their appearance in the book. Most listings consists of errant text followed by a brief description of the error, followed by corrected text.

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**p. xii, Table of Contents**

*Dynamical Effects and Their Applications*
REVIEW LECTURE D

There should be no subtitle “REVIEW LECTURE D” under the title of chapter 4. The lecture on Dynamical Effects was not a review.

*Dynamical Effects and Their Applications*

**p. 11, par 3**

(see Sec. 36-4 of Vol. 1)

Volume number should be a Roman numeral I, not an Arabic numeral 1.

(see Sec. 36-4 of Vol. I)

**p. 15, Chapter 1 Title**

1 *Prerequisites*

Subtitle “REVIEW LECTURE A” is missing.

1 *Prerequisites*
REVIEW LECTURE A

**p. 26, Fig 1-7**

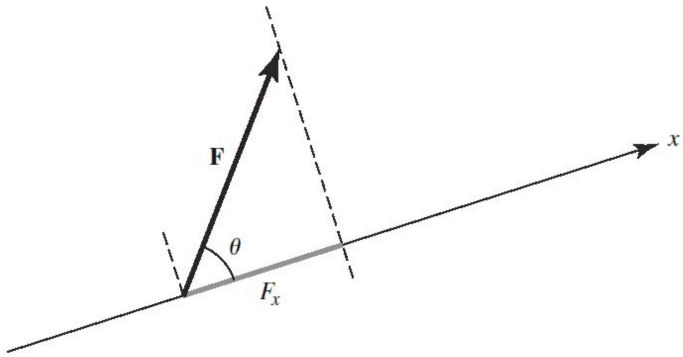


**FIGURE 1-7** The component of vector **F** in direction *x*.

The leftmost dashed line should extend below the x axis, as per the rightmost dashed line (similar to figures 1-8 and 1-9).

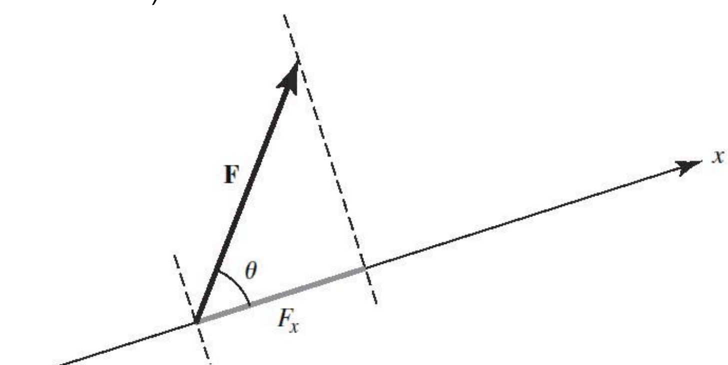


**FIGURE 1-7** The component of vector **F** in direction *x*.

**p. 42, par 2**

And, in Eq. 2.1, **F** is the total force

Missing parentheses around equation number.

And, in Eq. (2.1) , **F** is the total force

**p. 44, par 1**

Of course with large objects, in can happen that ...

Typographical error ("in" vs. "it")

Of course with large objects, it can happen that ...

**p. 44, par 1**

... because the conservation of energy needn't be true when the objects involved are large, like weights and so on.

Inaccurate statement.

... because the conservation of kinetic energy needn't be true when the objects involved are large, like weights and so on, that have inelastic collisions.

**p. 44, par 4**

Under those circumstances we can write that the work done on the particle is equal to the change in another quantity called its *potential energy, or P.E.*...

Sign error.

Under those circumstances we can write that the work done on the particle is equal in magnitude and opposite to the change in another quantity called its *potential energy, or P.E.*

**p. 44, Eq 2.13**

$$\Delta W = \Delta P.E. \quad (\textit{with a conservative force}, \mathbf{F}). \tag{2.13}$$

Sign error.

$$\Delta W = -\Delta P.E. \quad (\textit{with a conservative force}, \mathbf{F}). \tag{2.13}$$

**p. 46, par 2**

if, at a given instant, a thing is moving on a circle of radius $r$ at velocity $\mathbf{v}$, then it's acceleration is directed towards the center, and is equal in magnitude to $v^2/r$.

This is true only if $|\mathbf{v}|$ is constant.

if, at a given instant, a thing is moving on a circle of radius $r$ at constant speed $v$, then it's acceleration is directed towards the center, and is equal in magnitude to $v^2/r$.

**p. 46, Fig 2-2, caption**

**Figure 2-2** Velocity and acceleration vectors for circular motion

The figure is accurate only if $|\mathbf{v}|$ is constant.

**Figure 2-2** Velocity and acceleration vectors for constant-speed circular motion

**p. 47, Table 2-2, 1st line**

$$\Delta P.E. \;=\; \Delta W \qquad\qquad P.E.\ is\ undefined.$$

Sign error.

$$\Delta P.E. \;=\; -\Delta W \qquad\qquad P.E.\ is\ undefined.$$

**p. 48, par 2**

Let's see: the particles lose energy when they come together, so that means when *r* is smaller, the potential energy should be less, so it's negative—

Clarification required: the particles lose *potential* energy when they come together.

Let's see: the particles lose potential energy when they come together, so that means when *r* is smaller, the potential energy should be less, so it's negative—

**p. 55, footnote 5**

See *Alternative Solutions A* on page 67

Incorrect plural.

See *Alternative Solution A* on page 67

**p. 58 par 1**

I worked out the three-eighths of each of these things, and I got 7.35 for gravity, and 2.925 for the inertial force, and the difference is 4.425 newtons—

Needs clarification.

I worked out the three-eighths of each of these things, and I got 7.35 for gravity, and 2.925 for the term due to the acceleration, and the difference is 4.425 newtons—

**p. 59 par 5**

Now, when I push on the roller with a force $\mathbf{F}_R$ while moving it at a velocity $\mathbf{v}_R$, …

Text does not match figures.

Now, when I push on the roller with a force $\mathbf{P} = -\mathbf{F}_R$ while moving it at a velocity $\mathbf{v}_R$, …

**p. 63, par 1**

So, I'm all finished; I need merely put 0.3 in for *t*, and I'm all done:

Sign error.

So, I'm all finished; I need merely put 0.3 in for *t*, and I'm all done. Well, not quite—to make the signs come out right I have to use $t = -0.3$:

**p. 63, Eq 2.29**

$$\frac{dE}{dt}(0.3) = \frac{2.4}{0.4096} - 19.6\times\frac{0.3}{0.4} \approx -8.84 \text{ watts.} \qquad (2.29)$$

Sign errors (4 occurrences).

$$\frac{dE}{dt}(-0.3) = -\frac{2.4}{0.4096} + 19.6\times\frac{0.3}{0.4} \approx 8.84 \text{ watts.} \qquad (2.29)$$

**p. 63, par 3**

The sign of *dE/dt* is negative, which must mean that the direction of the gravitational part of the force is opposite the direction of the kinetic part of the force. Anyhow, one is positive and the other is negative, which is all I want to know. I know which way the gravitational part of the force is: I've got to *push* on the roller to support the weight, so the kinetic part must *reduce* the total force. You can put the numbers in, and sure enough, the force comes out to be the same as before:

Needs clarification (and sign error correction).

The first term on the right-hand side of Eq. (2.29) is negative because the weight is decelerating, so it's losing kinetic energy; the second term is positive because the weight is going up, so it's gaining potential energy. Anyhow, they're opposite each other, which is all I want to know, and you can put the numbers in, and sure enough, the force comes out to be the same as before:

**p. 63, footnote 8**

The derivative of the total energy *with respect to x* is the magnitude of the force due to the weight (in the x direction). However, because *x* happens to equal *t* in this particular problem, the derivative of the weight's energy with respect to *t* equals its derivative with respect to *x.*

The work is being done on the roller at position x=2t, so the derivative of the potential energy with respect to 2t is the force.

The derivative of the energy with respect to the position of the roller is the magnitude of the force on the roller. However, because the position of the roller happens to equal 2*t* in this particular problem, the derivative of the energy with respect to *t* equals twice the force on the roller.

**p. 63, Eq 2.30**

$$2F_{\mathrm{R}} = \frac{dE}{dt} \approx -8.84$$

$$F_{\mathrm{R}} \approx -4.42 \text{ newtons.} \qquad (2.30)$$

Sign errors (2 occurrences).

$$2F_{\mathrm{R}} = \frac{dE}{dt} \approx 8.84$$

$$F_{\mathrm{R}} \approx 4.42 \text{ newtons.} \qquad (2.30)$$

**p. 64, Eq 2.31**

$(K.E. + P.E.)$ at $\infty$, $v = 0 \quad = \quad (K.E. + P.E.)$ at $R$, $v = v_{\mathrm{escape}}$
(*conservation of energy*)
$P.E.$ at $\infty$ = ... P.E. at Earth = ...

Inconsistent usage: "at *R*" and "at Earth".

$(K.E. + P.E.)$ at $\infty$, $v = 0 \quad = \quad (K.E. + P.E.)$ at $R$, $v = v_{\mathrm{escape}}$
(*conservation of energy*)
$P.E.$ at $\infty$ = ... P.E. at $R$ = ...

**p. 67, par 1**

Here are three more approaches to solving the machine design problem presented earlier in this chapter (Section 2-7), beginning on page 39.

Wrong page number reference.

Here are three more approaches to solving the machine design problem presented earlier in this chapter (Section 2-7), beginning on page 53.

**p. 69, par 1**

The weight moves at 1 m/s, so there is no horizontal force on it:

Missing word (“horizontally”).

The weight moves horizontally at 1 m/s, so there is no horizontal force on it:

**p. 81, Eq 3.17**

The subscripts on the limits of integration, $m_{\text{initial}}$ and $m_{\text{final}}$, are barely legible.

**p. 92, par 4**

We calculate the momentum of the $\mu$ from the formula $E^2 = m_0^2c^4 + p^2c^2$, choosing a system of units for which $c = 1$, so that $E^2 = m_0^2 + p^2$.

Archaic notation (‘$m_0$’ vs. ‘$m$’, 2 occurrences).

We calculate the momentum of the $\mu$ from the formula $E^2 = m^2c^4 + p^2c^2$, choosing a system of units for which $c = 1$, so that $E^2 = m^2 + p^2$.

**p. 95, Chapter 4 Title**

4 *Dynamical Effects*
*and Their Applications*
REVIEW LECTURE D

There should be no subtitle “REVIEW LECTURE D” under the title of chapter 4. The lecture on Dynamical Effects was not a review.

4 *Dynamical Effects*
*and Their Applications*

**p. 112, Fig 4-16**

Scale of accelerations indicated

Label on scale is wrong – does not match body text on bottom of page 111.

Scale of indicated accelerations

**p. 118, par 2**

which is averaging over long period,

Incorrect lack of plural.

which is averaging over long periods,

**p. 121, Fig 4-25**

In the bottom half of the figure the (circular) arrow showing the direction of the earth's precession is pointing in the wrong direction (counter-clockwise); the precessional rotation is in the reverse (clockwise) direction.

**p. 123-124, par 1**

… by spinning the disk backwards at exactly *half* the speed the shaft turns it around (such that $\mathbf{\Omega} = -B\omega_i\mathbf{i}$), …

Half the speed that the shaft turns the disk around it's axis is $(\omega_i/2)\mathbf{i}$. ($-B\omega_i\mathbf{i}$ is the resultant angular momentum).

… by spinning the disk backwards at exactly *half* the speed the shaft turns it around (such that $\mathbf{\Omega} = -(\omega_i/2)\mathbf{i}$)

**p. 126, par 2**

Figure 4-31 shows several different types of nebulae: the famous ordinary spiral (much like our own galaxy), a barred spiral, whose long arms extend from a central bar, and an elliptic nebula, which hasn't even got arms.

Incorrect lack of plurals, too many commas.

Figure 4-31 shows several different types of nebulae: the famous ordinary spiral (much like our own galaxy), barred spiral nebulae (whose long arms extend from a central bar), and elliptic nebulae (which don't even have arms).

**p. 132, par 6**

Now, when you go around a curve, you've got the pull–

Wrong word: "the" vs. "to".

Now, when you go around a curve, you've got to pull–

**p. 135, par 1**

For example, the subject matter of the exercises in section **“5-1 Conservation of energy, statics (Vol. I, Ch.4)”** is discussed in *The Feynman Lectures on Physics*, Volume I, Chapter 4.

Quotation marks are misplaced and should not be bold,“5-1” should not be bold, and commas (maybe) needed.

For example, the subject matter of the exercises in section 5-1, “**Conservation of energy, statics (Vol. I, Ch.4)**” is discussed in *The Feynman Lectures on Physics*, Volume I, Chapter 4.

**p. 137 Ex 1-9**

** **1-7** A tank of cross-sectional area A ...

Exercise 1-9 is misnumbered (so we have two exercise 1-7s).

** **1-9** A tank of cross-sectional area A ...

**p. 146, Ex 9-9**

A satellite of mass m moves in a circular orbit around an asteroid of mass M ($M >> m$).

Incorrect italics in parenthetical clause.

A satellite of mass m moves in a circular orbit around an asteroid of mass M (M >> m).

**p. 147, Ex 11-3**

** **11-3** A particle of rest mass $m_0$, moving at speed v = 4c/5, collides inelastically with a similar particle at rest.

Archaic notation (‘ $m_0$ ’ vs. ‘ m ’).

** **11-3** A particle of mass m, moving at speed v = 4c/5, collides inelastically with a similar particle at rest.

**p. 156, answer 4-5**

$m_b \approx 5.8\,\text{kg}$

Subscript ‘b’ should be (capital) ‘B’.

$m_B \approx 5.8\,\text{kg}$

**p. 157, answer 11-1a**

$$\text{a) } pc = T\left(1+\frac{2m_c^2}{T}\right)^{1/2}$$

'$m_c^2$' should be '$m_0c^2$'

$$\text{a) } pc = T\left(1+\frac{2m_0c^2}{T}\right)^{1/2}$$

**p. 157, answer 11-3b**

$$\text{b) } \frac{4}{\sqrt{3}}m_0$$

Archaic notation ('$m_0$' vs. '$m$').

$$\text{b) } \frac{4}{\sqrt{3}}m$$

**p. 162 (Index)**



wrong page number reference