

# Make `amsmath`\* work with `lineno`

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This document demonstrates patches to the `amsmath` package to work with the `lineno` package. The code I've used is largely based on the posts here<sup>1</sup> and here<sup>2</sup>; credit is due to their author(s). In addition I've made a few refinements to handle some corner cases.

## Demonstration

This section demonstrates that, with this package, line numbers are correctly formatted when using `amsmath` math environments. `amsmath` is loaded first, and then patched directly by `lineno`.

### 1 Normal text

2 Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum  
3 ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu  
4 libero, nonummy eget, consectetur id, vulputate a, magna.

### 5 equation

### 6 With line numbers in equations

7 Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor  
8 lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus.  
9 Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae  
10 ornare odio metus a mi.

11 (1) 
$$E = mc^2.$$

12 Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tin-  
13 cidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pel-  
14 lentesque ante.

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\*<https://ctan.org/pkg/amsmath>

<sup>1</sup><https://tex.stackexchange.com/a/461192>

<sup>2</sup><https://tex.stackexchange.com/a/443201>

15 **Without line numbers in equations**

16 Quisque ullamcorper placerat ipsum. Cras nibh. Morbi vel justo vitae lacus  
17 tincidunt ultrices. Lorem ipsum dolor sit amet, consectetur adipiscing elit.

(2) 
$$E = mc^2.$$

18 Fusce mauris. Vestibulum luctus nibh at lectus. Sed bibendum, nulla a faucibus  
19 semper, leo velit ultricies tellus, ac venenatis arcu wisi vel nisl. Vestibulum diam.

20 **equation\***

21 **With line numbers in equations**

22 Suspendisse vel felis. Ut lorem lorem, interdum eu, tincidunt sit amet, laoreet  
23 vitae, arcu. Aenean faucibus pede eu ante. Praesent enim elit, rutrum at, molestie  
24 non, nonummy vel, nisl.

25 
$$E = mc^2.$$

26 Sed commodo posuere pede. Mauris ut est. Ut quis purus. Sed ac odio.

27 **Without line numbers in equations**

28 Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac  
29 turpis egestas. Donec odio elit, dictum in, hendrerit sit amet, egestas sed, leo.  
30 Praesent feugiat sapien aliquet odio. Integer vitae justo.

$$E = mc^2.$$

31 Morbi luctus, wisi viverra faucibus pretium, nibh est placerat odio, nec commodo  
32 wisi enim eget quam. Quisque libero justo, consectetur a, feugiat vitae, porttitor  
33 eu, libero. Suspendisse sed mauris vitae elit sollicitudin malesuada. Maecenas  
34 ultricies eros sit amet ante.

35  $\left[ \dots \right]$

36 **With line numbers in equations**

37 Suspendisse vitae elit. Aliquam arcu neque, ornare in, ullamcorper quis, commodo  
38 eu, libero. Fusce sagittis erat at erat tristique mollis. Maecenas sapien libero,  
39 molestie et, lobortis in, sodales eget, dui.

40 
$$E = mc^2.$$

41 Sed feugiat. Cum sociis natoque penatibus et magnis dis parturient montes, nasce-  
42 tur ridiculus mus. Ut pellentesque augue sed urna. Vestibulum diam eros, fringilla  
43 et, consectetur eu, nonummy id, sapien.

44 **Without line numbers in equations**

45 Etiam euismod. Fusce facilisis lacinia dui. Suspendisse potenti. In mi erat, cursus  
46 id, nonummy sed, ullamcorper eget, sapien.

$$E = mc^2.$$

47 Aliquam lectus. Vivamus leo. Quisque ornare tellus ullamcorper nulla. Mauris  
48 porttitor pharetra tortor.

49 **multiline**

50 **With line numbers in equations**

51 Etiam ac leo a risus tristique nonummy. Donec dignissim tincidunt nulla. Vestibu-  
52 lum rhoncus molestie odio. Sed lobortis, justo et pretium lobortis, mauris turpis  
53 condimentum augue, nec ultricies nibh arcu pretium enim.

54 (3)  $\frac{1}{1+x} = 1 - x + x^2 - x^3 + x^4 - x^5 + x^6 - x^7 + x^8 - x^9 + \mathcal{O}(x^{10}).$

55 Nulla in ipsum. Praesent eros nulla, congue vitae, euismod ut, commodo a, wisi.  
56 Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac  
57 turpis egestas. Aenean nonummy magna non leo.

58 (4)  $\frac{1}{1+x} = 1 - x + x^2 - x^3 + x^4 - x^5 + x^6 - x^7 + x^8 - x^9$   
59  $+ x^{10} - x^{11} + x^{12} - x^{13} + x^{14} - x^{15} + x^{16} - x^{17} + x^{18} - x^{19} + \mathcal{O}(x^{20}).$

60 Nulla mattis luctus nulla. Duis commodo velit at leo. Aliquam vulputate magna  
61 et leo. Nam vestibulum ullamcorper leo.

62 **Without line numbers in equations**

63 Curabitur tellus magna, porttitor a, commodo a, commodo in, tortor. Donec  
64 interdum. Praesent scelerisque. Maecenas posuere sodales odio.

(5)  $\frac{1}{1+x} = 1 - x + x^2 - x^3 + x^4 - x^5 + x^6 - x^7 + x^8 - x^9 + \mathcal{O}(x^{10}).$

65 Donec et nisl at wisi luctus bibendum. Nam interdum tellus ac libero. Sed sem  
66 justo, laoreet vitae, fringilla at, adipiscing ut, nibh. Maecenas non sem quis tortor  
67 eleifend fermentum.

(6)  $\frac{1}{1+x} = 1 - x + x^2 - x^3 + x^4 - x^5 + x^6 - x^7 + x^8 - x^9$   
 $+ x^{10} - x^{11} + x^{12} - x^{13} + x^{14} - x^{15} + x^{16} - x^{17} + x^{18} - x^{19} + \mathcal{O}(x^{20}).$

68 Nulla non mauris vitae wisi posuere convallis. Sed eu nulla nec eros scelerisque  
69 pharetra. Nullam varius. Etiam dignissim elementum metus.

70 `multiline*`

71 **With line numbers in equations**

72 Nulla ac nisl. Nullam urna nulla, ullamcorper in, interdum sit amet, gravida ut,  
73 risus. Aenean ac enim. In luctus.

74 
$$\frac{1}{1+x} = 1 - x + x^2 - x^3 + x^4 - x^5 + x^6 - x^7 + x^8 - x^9 + \mathcal{O}(x^{10}).$$

75 Etiam pede massa, dapibus vitae, rhoncus in, placerat posuere, odio. Vestibulum  
76 luctus commodo lacus. Morbi lacus dui, tempor sed, euismod eget, condimentum  
77 at, tortor. Phasellus aliquet odio ac lacus tempor faucibus.

$$\frac{1}{1+x} = 1 - x + x^2 - x^3 + x^4 - x^5 + x^6 - x^7 + x^8 - x^9 \quad [\\*]$$
  
78 
$$+ x^{10} - x^{11} + x^{12} - x^{13} + x^{14} - x^{15} + x^{16} - x^{17} + x^{18} - x^{19} + \mathcal{O}(x^{20}).$$

79 Etiam suscipit aliquam arcu. Aliquam sit amet est ac purus bibendum congue.  
80 Sed in eros. Morbi non orci.

81 **Without line numbers in equations**

82 Donec et nisl id sapien blandit mattis. Aenean dictum odio sit amet risus. Morbi  
83 purus. Nulla a est sit amet purus venenatis iaculis.

$$\frac{1}{1+x} = 1 - x + x^2 - x^3 + x^4 - x^5 + x^6 - x^7 + x^8 - x^9 + \mathcal{O}(x^{10}).$$

84 Maecenas non massa. Vestibulum pharetra nulla at lorem. Duis quis quam id  
85 lacus dapibus interdum. Nulla lorem.

$$\frac{1}{1+x} = 1 - x + x^2 - x^3 + x^4 - x^5 + x^6 - x^7 + x^8 - x^9$$
  
$$+ x^{10} - x^{11} + x^{12} - x^{13} + x^{14} - x^{15} + x^{16} - x^{17} + x^{18} - x^{19} + \mathcal{O}(x^{20}).$$

86 Vivamus eu tellus sed tellus consequat suscipit. Nam orci orci, malesuada id,  
87 gravida nec, ultricies vitae, erat. Donec risus turpis, luctus sit amet, interdum  
88 quis, porta sed, ipsum. Suspendisse condimentum, tortor at egestas posuere, neque  
89 metus tempor orci, et tincidunt urna nunc a purus.

90 `gather`

91 **With line numbers in equations**

92 Duis aliquet dui in est. Donec eget est. Nunc lectus odio, varius at, fermentum  
93 in, accumsan non, enim. Aliquam erat volutpat.

94 (7) 
$$E = mc^2.$$

95 Donec vel nibh ut felis consectetur laoreet. Donec pede. Sed id quam id wisi  
96 laoreet suscipit. Nulla lectus dolor, aliquam ac, fringilla eget, mollis ut, orci.

$$\begin{aligned} 97 \quad (8) \quad & E = mc^2, \\ 98 \quad (9) \quad & E^2 = p^2c^2 + m_0^2c^4. \end{aligned}$$

99 Donec molestie, magna ut luctus ultrices, tellus arcu nonummy velit, sit amet  
100 pulvinar elit justo et mauris. In pede. Maecenas euismod elit eu erat. Aliquam  
101 augue wisi, facilisis congue, suscipit in, adipiscing et, ante.

## 102 Without line numbers in equations

103 Cras dapibus, augue quis scelerisque ultricies, felis dolor placerat sem, id porta  
104 velit odio eu elit. Aenean interdum nibh sed wisi. Praesent sollicitudin vulputate  
105 dui. Praesent iaculis viverra augue.

$$(10) \quad E = mc^2.$$

106 Sed mattis, erat sit amet gravida malesuada, elit augue egestas diam, tempus  
107 scelerisque nunc nisl vitae libero. Sed consequat feugiat massa. Nunc porta, eros  
108 in eleifend varius, erat leo rutrum dui, non convallis lectus orci ut nibh. Sed lorem  
109 massa, nonummy quis, egestas id, condimentum at, nisl.

$$\begin{aligned} (11) \quad & E = mc^2, \\ (12) \quad & E^2 = p^2c^2 + m_0^2c^4. \end{aligned}$$

110 Sed consequat tellus et tortor. Ut tempor laoreet quam. Nullam id wisi a libero  
111 tristique semper. Nullam nisl massa, rutrum ut, egestas semper, mollis id, leo.

112 **gather\***

## 113 With line numbers in equations

114 Phasellus id magna. Duis malesuada interdum arcu. Integer metus. Morbi pulv-  
115 inar pellentesque mi.

$$116 \quad E = mc^2.$$

117 Sed eleifend, eros sit amet faucibus elementum, urna sapien consectetur mauris,  
118 quis egestas leo justo non risus. Morbi non felis ac libero vulputate fringilla.  
119 Mauris libero eros, lacinia non, sodales quis, dapibus porttitor, pede. Class aptent  
120 taciti sociosqu ad litora torquent per conubia nostra, per inceptos hymenaeos.

$$\begin{aligned} & E = mc^2, \quad [\backslash*] \\ 121 \quad & E^2 = p^2c^2 + m_0^2c^4. \end{aligned}$$

122 Nullam eleifend justo in nisl. In hac habitasse platea dictumst. Morbi nonummy.  
123 Aliquam ut felis.

124 **Without line numbers in equations**

125 Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos  
126 hymenaeos. Aenean nonummy turpis id odio. Integer euismod imperdiet turpis.  
127 Ut nec leo nec diam imperdiet lacinia.

$$E = mc^2.$$

128 Nulla malesuada risus ut urna. Aenean pretium velit sit amet metus. Duis iaculis.  
129 In hac habitasse platea dictumst.

$$E = mc^2, \\ E^2 = p^2 c^2 + m_0^2 c^4.$$

130 Donec tempus neque vitae est. Aenean egestas odio sed risus ullamcorper ullam-  
131 corper. Sed in nulla a tortor tincidunt egestas. Nam sapien tortor, elementum sit  
132 amet, aliquam in, porttitor faucibus, enim.

133 **align**

134 **With line numbers in equations**

135 Fusce suscipit cursus sem. Vivamus risus mi, egestas ac, imperdiet varius, faucibus  
136 quis, leo. Aenean tincidunt. Donec suscipit.

137 (13)  $\nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}.$

138 Praesent sed neque id pede mollis rutrum. Vestibulum iaculis risus. Pellentesque  
139 lacus. Ut quis nunc sed odio malesuada egestas.

140 (14)  $\nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t},$

141 (15)  $\nabla \cdot \vec{B} = 0, \quad \nabla \times \vec{B} = \frac{1}{c^2} \frac{\partial \vec{E}}{\partial t}.$

142 Sed gravida lectus ut purus. Morbi laoreet magna. Pellentesque eu wisi. Proin  
143 turpis.

144 **Without line numbers in equations**

145 Curabitur ac lorem. Vivamus non justo in dui mattis posuere. Etiam accumsan  
146 ligula id pede. Maecenas tincidunt diam nec velit.

(16)  $\nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}.$

147 Quisque consectetur. In suscipit mauris a dolor pellentesque consectetur. Mauris  
148 convallis neque non erat. In lacinia.

(17)  $\nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t},$

$$(18) \quad \nabla \cdot \vec{B} = 0, \quad \nabla \times \vec{B} = \frac{1}{c^2} \frac{\partial \vec{E}}{\partial t}.$$

149 Maecenas accumsan dapibus sapien. Duis pretium iaculis arcu. Curabitur ut  
150 lacus. Aliquam vulputate.

151 align\*

## 152 With line numbers in equations

153 Phasellus fringilla, metus id feugiat consectetur, lacus wisi ultrices tellus, quis  
154 lobortis nibh lorem quis tortor. Donec egestas ornare nulla. Mauris mi tellus,  
155 porta faucibus, dictum vel, nonummy in, est. Aliquam erat volutpat.

$$156 \quad \nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}.$$

157 Cras egestas ipsum a nisl. Vivamus varius dolor ut dolor. Fusce vel enim. Pellentesque  
158 accumsan ligula et eros.

$$\begin{aligned} \nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} &= -\frac{\partial \vec{B}}{\partial t}, & [\backslash*] \\ \nabla \cdot \vec{B} = 0, \quad \nabla \times \vec{B} &= \frac{1}{c^2} \frac{\partial \vec{E}}{\partial t}. \end{aligned}$$

160 In hac habitasse platea dictumst. Proin at est. Curabitur tempus vulputate elit.  
161 Pellentesque sem.

## 162 Without line numbers in equations

163 Donec in nisl. Fusce vitae est. Vivamus ante ante, mattis laoreet, posuere eget,  
164 congue vel, nunc. Fusce sem.

$$\nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}.$$

165 Morbi justo. Aenean nec dolor. In hac habitasse platea dictumst. Proin nonummy  
166 porttitor velit.

$$\begin{aligned} \nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} &= -\frac{\partial \vec{B}}{\partial t}, \\ \nabla \cdot \vec{B} = 0, \quad \nabla \times \vec{B} &= \frac{1}{c^2} \frac{\partial \vec{E}}{\partial t}. \end{aligned}$$

167 Vivamus sodales elementum neque. Vivamus dignissim accumsan neque. Sed at  
168 enim. Vestibulum nonummy interdum purus.

169 alignat

170 **With line numbers in equations**

171 Quisque facilisis auctor sapien. Pellentesque gravida hendrerit lectus. Mauris  
172 rutrum sodales sapien. Fusce hendrerit sem vel lorem.

173 (19) 
$$\nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}.$$

174 Maecenas dui. Aliquam volutpat auctor lorem. Cras placerat est vitae lectus.  
175 Curabitur massa lectus, rutrum euismod, dignissim ut, dapibus a, odio.

176 (20) 
$$\nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t},$$

177 (21) 
$$\nabla \cdot \vec{B} = 0, \quad \nabla \times \vec{B} = \frac{1}{c^2} \frac{\partial \vec{E}}{\partial t}.$$

178 Donec vitae velit. Suspendisse porta fermentum mauris. Ut vel nunc non mauris  
179 pharetra varius. Duis consequat libero quis urna.

180 **Without line numbers in equations**

181 Phasellus placerat vulputate quam. Maecenas at tellus. Pellentesque neque diam,  
182 dignissim ac, venenatis vitae, consequat ut, lacus. Nam nibh.

(22) 
$$\nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}.$$

183 Morbi nunc. Aliquam consectetur varius nulla. Phasellus eros. Cras dapibus  
184 porttitor risus.

(23) 
$$\nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t},$$

(24) 
$$\nabla \cdot \vec{B} = 0, \quad \nabla \times \vec{B} = \frac{1}{c^2} \frac{\partial \vec{E}}{\partial t}.$$

185 Nunc velit. Nullam elit sapien, eleifend eu, commodo nec, semper sit amet, elit.  
186 Nulla lectus risus, condimentum ut, laoreet eget, viverra nec, odio. Proin lobortis.

187 alignat\*

188 **With line numbers in equations**

189 Morbi tincidunt posuere arcu. Cras venenatis est vitae dolor. Vivamus scelerisque  
190 semper mi. Donec ipsum arcu, consequat scelerisque, viverra id, dictum at, metus.

191 
$$\nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}.$$



192 Aenean laoreet aliquam orci. Nunc interdum elementum urna. Quisque erat.  
 193 Nullam tempor neque.

$$\begin{aligned} \nabla \cdot \vec{E} &= 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}, & [\\*] \\ \nabla \cdot \vec{B} &= 0, \quad \nabla \times \vec{B} = \frac{1}{c^2} \frac{\partial \vec{E}}{\partial t}. \end{aligned}$$

195 Aenean scelerisque. Fusce pretium porttitor lorem. In hac habitasse platea dic-  
 196 tumst. Nulla sit amet nisl at sapien egestas pretium.

### 197 Without line numbers in equations

198 Ut quis wisi. Praesent quis massa. Vivamus egestas risus eget lacus. Nunc tin-  
 199 cidunt, risus quis bibendum facilisis, lorem purus rutrum neque, nec porta tortor  
 200 urna quis orci.

$$\nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}.$$

201 Vivamus commodo eros eleifend dui. Vestibulum in leo eu erat tristique mattis.  
 202 Cras at elit. Cras pellentesque.

$$\begin{aligned} \nabla \cdot \vec{E} &= 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}, \\ \nabla \cdot \vec{B} &= 0, \quad \nabla \times \vec{B} = \frac{1}{c^2} \frac{\partial \vec{E}}{\partial t}. \end{aligned}$$

203 Morbi sem. Nulla facilisi. Vestibulum ante ipsum primis in faucibus orci luctus et  
 204 ultrices posuere cubilia Curae; Nulla facilisi. Morbi sagittis ultrices libero.

### 205 flalign

### 206 With line numbers in equations

207 Fusce tristique risus id wisi. Integer molestie massa id sem. Vestibulum vel dolor.  
 208 Pellentesque vel urna vel risus ultricies elementum.

$$(25) \quad \nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}.$$

210 Aliquam tortor. Morbi ipsum massa, imperdiet non, consectetur vel, feugiat vel,  
 211 lorem. Quisque eget lorem nec elit malesuada vestibulum. Quisque sollicitudin  
 212 ipsum vel sem.

$$(26) \quad \nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t},$$

$$(27) \quad \nabla \cdot \vec{B} = 0, \quad \nabla \times \vec{B} = \frac{1}{c^2} \frac{\partial \vec{E}}{\partial t}.$$

215 Vivamus sit amet pede. Duis interdum, nunc eget rutrum dignissim, nisl diam  
 216 luctus leo, et tincidunt velit nisl id tellus. In lorem tellus, aliquet vitae, porta in,  
 217 aliquet sed, lectus. Phasellus sodales.

## 218 Without line numbers in equations

219 Etiam vel ipsum. Morbi facilisis vestibulum nisl. Praesent cursus laoreet felis.  
 220 Integer adipiscing pretium orci.

$$(28) \quad \nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}.$$

221 Nunc sed pede. Praesent vitae lectus. Praesent neque justo, vehicula eget, inter-  
 222 dum id, facilisis et, nibh. Phasellus at purus et libero lacinia dictum.

$$(29) \quad \nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t},$$

$$(30) \quad \nabla \cdot \vec{B} = 0, \quad \nabla \times \vec{B} = \frac{1}{c^2} \frac{\partial \vec{E}}{\partial t}.$$

223 Donec a nibh ut elit vestibulum tristique. Integer at pede. Cras volutpat varius  
 224 magna. Phasellus eu wisi.

225 `flalign*`

## 226 With line numbers in equations

227 Integer placerat. Pellentesque habitant morbi tristique senectus et netus et male-  
 228 suada fames ac turpis egestas. Sed in massa. Class aptent taciti sociosqu ad litora  
 229 torquent per conubia nostra, per inceptos hymenaeos.

$$230 \quad \nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}.$$

231 Mauris tempus eros at nulla. Sed quis dui dignissim mauris pretium tincidunt.  
 232 Mauris ac purus. Phasellus ac libero.

$$\nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}, \quad [\\*]$$

$$233 \quad \nabla \cdot \vec{B} = 0, \quad \nabla \times \vec{B} = \frac{1}{c^2} \frac{\partial \vec{E}}{\partial t}.$$

234 Ut auctor, augue porta dignissim vestibulum, arcu diam lobortis velit, vel  
 235 scelerisque risus augue sagittis risus. Maecenas eu justo. Pellentesque habitant  
 236 morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris  
 237 congue ligula eget tortor.

238 **Without line numbers in equations**

239 Aenean tincidunt laoreet dui. Vestibulum ante ipsum primis in faucibus orci luctus  
240 et ultrices posuere cubilia Curae; Integer ipsum lectus, fermentum ac, malesuada  
241 in, eleifend ut, lorem. Vivamus ipsum turpis, elementum vel, hendrerit ut, semper  
242 at, metus. Vivamus sapien tortor, eleifend id, dapibus in, egestas et, pede.

$$\nabla \cdot \vec{E} = 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}.$$

243 Praesent facilisis, augue a adipiscing venenatis, libero risus molestie odio, pulvinar  
244 consectetuer felis erat ac mauris. Nam vestibulum rhoncus quam. Sed velit urna,  
245 pharetra eu, eleifend eu, viverra at, wisi. Maecenas ultrices nibh at turpis.

$$\begin{aligned} \nabla \cdot \vec{E} &= 0, \quad \nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}, \\ \nabla \cdot \vec{B} &= 0, \quad \nabla \times \vec{B} = \frac{1}{c^2} \frac{\partial \vec{E}}{\partial t}. \end{aligned}$$

246 Integer vel enim sed turpis adipiscing bibendum. Vestibulum pede dolor, laoreet  
247 nec, posuere in, nonummy in, sem. Donec imperdiet sapien placerat erat. Donec  
248 viverra.

249 **Long equation with \allowdisplaybreaks**

250 Aenean velit sem, viverra eu, tempus id, rutrum id, mi. Nullam nec nibh. Proin  
251 ullamcorper, dolor in cursus tristique, eros augue tempor nibh, at gravida diam  
252 wisi at purus. Donec mattis ullamcorper tellus.

253 (31)  $0, 1, 2,$

254  $3,$   
255  $4, 5,$   
256  $6, 7,$   
257  $8, 9, 10, 11,$   
258  $12, 13,$   
259  $14, 15, 16, 17,$   
260  $18, 19,$   
261  $20, 21, 22, 23,$   
262  $24, 25, 26, 27, 28, 29,$   
263  $30, 31,$   
264  $32, 33, 34, 35, 36, 37,$   
265  $38, 39, 40, 41,$   
266  $42, 43,$   
267  $44, 45, 46, 47,$

268 48, 49, 50, 51, 52, 53,  
 269 54, 55, 56, 57, 58, 59,  
 270 60, 61,  
 271 62, 63, 64, 65, 66, 67,  
 272 68, 69, 70, 71,  
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 274 74, 75, 76, 77, 78, 79,  
 275 80, 81, 82, 83,  
 276 84, 85, 86, 87, 88, 89,  
 277 90, 91, 92, 93, 94, 95, 96, 97,  
 278 98, 99, 100, 101,  
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 280 104, 105, 106, 107,  
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 283 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127,  
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 291 164, 165, 166, 167,  
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 332 402, 403, 404, 405, 406, 407, 408, 409,  
 333 410, 411, 412, 413, 414, 415, 416, 417, 418, 419,  
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 341 458, 459, 460, 461,

342 462, 463,  
343 464, 465, 466, 467,  
344 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479,  
345 480, 481, 482, 483, 484, 485, 486, 487,  
346 488, 489, 490, 491,  
347 492, 493, 494, 495, 496, 497, 498, 499 .  
348 Pellentesque interdum sapien sed nulla. Proin tincidunt. Aliquam volutpat est vel  
349 massa. Sed dolor lacus, imperdiet non, ornare non, commodo eu, neque.