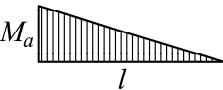
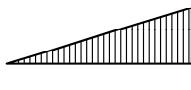
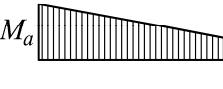
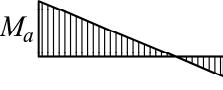
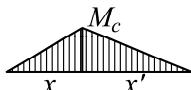
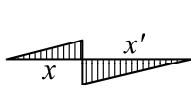
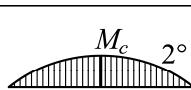
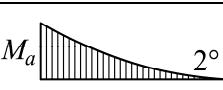
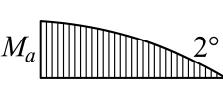
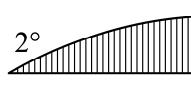
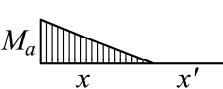
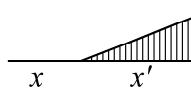
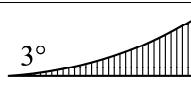
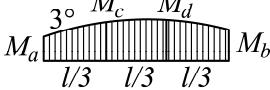
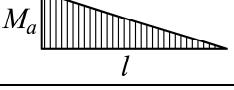
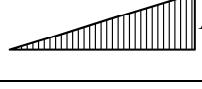
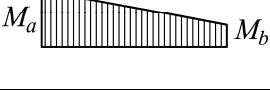
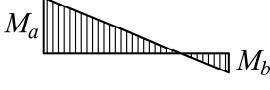
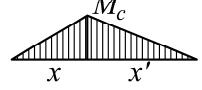
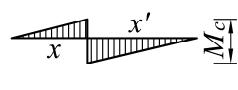
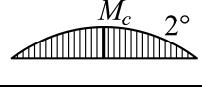
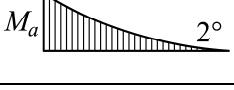
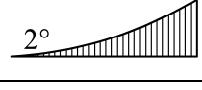
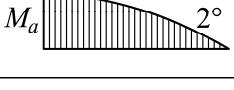
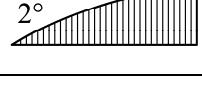


## Hodnoty integrálů $\int M \bar{M} dx$ u prutů konstantního průřezu

| Zatěž.<br>případ | $M$   | $\bar{M}$                             | $\bar{M}_a$                                      | $\bar{M}_b$   |
|------------------|---|---------------------------------------|--|---|
| 1                |    | $\frac{1}{2} M_a \bar{M}_a l$         | $\frac{1}{3} \bar{M}_a M_a l$                    | $\frac{1}{6} M_a (2\bar{M}_a + \bar{M}_b) l$                            |
| 2                |    | $\frac{1}{2} \bar{M}_a M_b l$         | $\frac{1}{6} \bar{M}_a M_b l$                    | $\frac{1}{6} M_b (\bar{M}_a + 2\bar{M}_b) l$                            |
| 3                |    | $\frac{1}{2} (M_a + M_b) \bar{M}_a l$ | $\frac{1}{6} (2M_a + M_b) \bar{M}_a l$           | $\frac{1}{6} [\bar{M}_a (2M_a + M_b) + \bar{M}_b (M_a + 2M_b)] l$       |
| 4                |    | $\frac{1}{2} (M_a - M_b) \bar{M}_a l$ | $\frac{1}{6} (2M_a - M_b) \bar{M}_a l$           | $\frac{1}{6} [\bar{M}_a (2M_a - M_b) + \bar{M}_b (M_a - 2M_b)] l$       |
| 5                |    | $\frac{1}{2} \bar{M}_a M_c l$         | $\frac{1}{6} \bar{M}_a M_c (l + x')$             | $\frac{1}{6} [\bar{M}_a (l + x') + \bar{M}_b (l + x)] M_c$              |
| 6                |    | $\frac{1}{2} \bar{M}_a M_c (x - x')$  | $\frac{1}{6l} \bar{M}_a M_c (l^2 - 3x'^2)$       | $\frac{M_c}{6l} [\bar{M}_b (3x^2 - l^2) - \bar{M}_a (3x'^2 - l^2)]$     |
| 7                |   | $M_a \bar{M}_a l$                     | $\frac{1}{2} \bar{M}_a M_a l$                    | $\frac{1}{2} (\bar{M}_a + \bar{M}_b) M_a l$                             |
| 8                |  | $\frac{2}{3} \bar{M}_a M_c l$         | $\frac{1}{3} \bar{M}_a M_c l$                    | $\frac{1}{3} M_c (\bar{M}_a + \bar{M}_b) l$                             |
| 9                |  | $\frac{1}{3} \bar{M}_a M_a l$         | $\frac{1}{4} \bar{M}_a M_a l$                    | $\frac{1}{12} M_a (3\bar{M}_a + \bar{M}_b) l$                           |
| 10               |  | $\frac{1}{3} \bar{M}_a M_b l$         | $\frac{1}{12} \bar{M}_a M_b l$                   | $\frac{1}{12} M_b (\bar{M}_a + 3\bar{M}_b) l$                           |
| 11               |  | $\frac{2}{3} \bar{M}_a M_a l$         | $\frac{5}{12} \bar{M}_a M_a l$                   | $\frac{1}{12} M_a (5\bar{M}_a + 3\bar{M}_b) l$                          |
| 12               |  | $\frac{2}{3} \bar{M}_a M_b l$         | $\frac{1}{4} \bar{M}_a M_b l$                    | $\frac{1}{12} M_b (3\bar{M}_a + 5\bar{M}_b) l$                          |
| 13               |  | $\frac{1}{2} \bar{M}_a M_a x$         | $\frac{1}{6} \bar{M}_a M_a \frac{x}{l} (3l - x)$ | $\frac{M_a}{6} \cdot \frac{x}{l} [\bar{M}_a (3l - x) + \bar{M}_b x]$    |
| 14               |  | $\frac{1}{2} \bar{M}_a M_b x'$        | $\frac{1}{6} \bar{M}_a M_b \frac{x'^2}{l}$       | $\frac{M_b}{6} \cdot \frac{x'}{l} [\bar{M}_b (3l - x') + \bar{M}_a x']$ |
| 15               |  | $\frac{1}{4} \bar{M}_a M_b l$         | $\frac{1}{20} \bar{M}_a M_b l$                   | $\frac{M_b}{20} (\bar{M}_a + 4\bar{M}_b) l$                             |
| 16               |  | $\frac{1}{4} \bar{M}_a M_a l$         | $\frac{1}{5} \bar{M}_a M_a l$                    | $\frac{M_a}{20} (4\bar{M}_a + \bar{M}_b) l$                             |

| Zatěž.<br>případ | $M$   | $\bar{M}$   | $\bar{M}_a$  | $\bar{M}_a$   |
|------------------|---|---|--|---|
| 17               |    | $\frac{\bar{M}_a}{8} (M_a + 3M_c + 3M_d + M_b)l$  | $\frac{\bar{M}_a}{120} (13M_a + 36M_c + 9M_d + 2M_b)l$ | $\frac{1}{120} [\bar{M}_a \cdot (13M_a + 36M_c + 9M_d + 2M_b) + \bar{M}_b \cdot (2M_a + 9M_c + 36M_d + 13M_b)]$ |
| Zatěž.<br>případ | $M$   | $\bar{M}_c$   | $\bar{M}_c$  | $\bar{M}_a$   |
| 18               |    | $\frac{1}{6} \bar{M}_c M_a (l + u')$  | $\frac{1}{3} \bar{M}_c M_a l$                          | $\frac{1}{4} \bar{M}_a M_a l$   |
| 19               |    | $\frac{1}{6} \bar{M}_c M_b (l + u)$   | $\frac{1}{3} \bar{M}_c M_b l$                          | $\frac{1}{12} \bar{M}_a M_b l$  |
| 20               |    | $\frac{\bar{M}_c}{6} [M_a(l + u') + M_b(l + u)]$  | $\frac{1}{3} \bar{M}_c (M_a + M_b)l$                   | $\frac{1}{12} \bar{M}_a (3M_a + M_b)l$  |
| 21               |    | $\frac{\bar{M}_c}{6} [M_a(l + u') - M_b(l + u)]$  | $\frac{1}{3} \bar{M}_c (M_a - M_b)l$                   | $\frac{1}{12} \bar{M}_a (3M_a - M_b)l$  |
| 22               |  | $\frac{\bar{M}_c M_c l}{6ux'} \cdot [2ux' - (x' - u')^2]$ pro $x < u$ ;<br>$\frac{\bar{M}_c M_c l}{6u'x} \cdot [2u'x - (u' - x')^2]$ pro $x > u$                                    | $\frac{\bar{M}_c M_c}{3l} (l^2 + xx')$                 | $\frac{\bar{M}_a M_c}{12l} (3lx' + x^2)$  |
| 23               |  | $\frac{\bar{M}_c M_c}{6} \cdot \left( l + u - \frac{3x'^2}{u'} \right)$<br>pro $x > u$ ;<br>$\frac{-\bar{M}_c M_c}{6} \cdot \left( l + u' - \frac{3x'^2}{u} \right)$<br>pro $x < u$ | $-\frac{\bar{M}_c M_c}{3l} (l^3 - 6lx^2 + 4x^3)$       | $\frac{\bar{M}_a M_c}{12l^2} (l^3 - 4x'^3)$   |
| 24               |  | $\frac{1}{2} \bar{M}_c M_a l$   | $\frac{2}{3} \bar{M}_c M_a l$                          | $\frac{1}{3} \bar{M}_a M_a l$   |
| 25               |  | $\frac{\bar{M}_c M_c}{3l} (l^2 + uu')$  | $\frac{8}{15} \bar{M}_c M_a l$                         | $\frac{1}{5} \bar{M}_a M_c l$   |
| 26               |  | $\frac{\bar{M}_c M_a}{12l} (3lu' + u^2)$  | $\frac{1}{5} \bar{M}_c M_a l$                          | $\frac{1}{5} \bar{M}_a M_a l$   |
| 27               |  | $\frac{\bar{M}_c M_b}{12l} (3lu + u'^2)$  | $\frac{1}{5} \bar{M}_c M_b l$                          | $\frac{1}{30} \bar{M}_a M_b l$  |
| 28               |  | $\frac{\bar{M}_c M_a}{12l} (5l^2 - ul - u^2)$   | $\frac{7}{15} \bar{M}_c M_a l$                         | $\frac{3}{10} \bar{M}_a M_a l$  |
| 29               |  | $\frac{\bar{M}_c M_b}{12l} (5l^2 - u'l - u'^2)$   | $\frac{7}{15} \bar{M}_c M_b l$                         | $\frac{2}{15} \bar{M}_a M_b l$  |