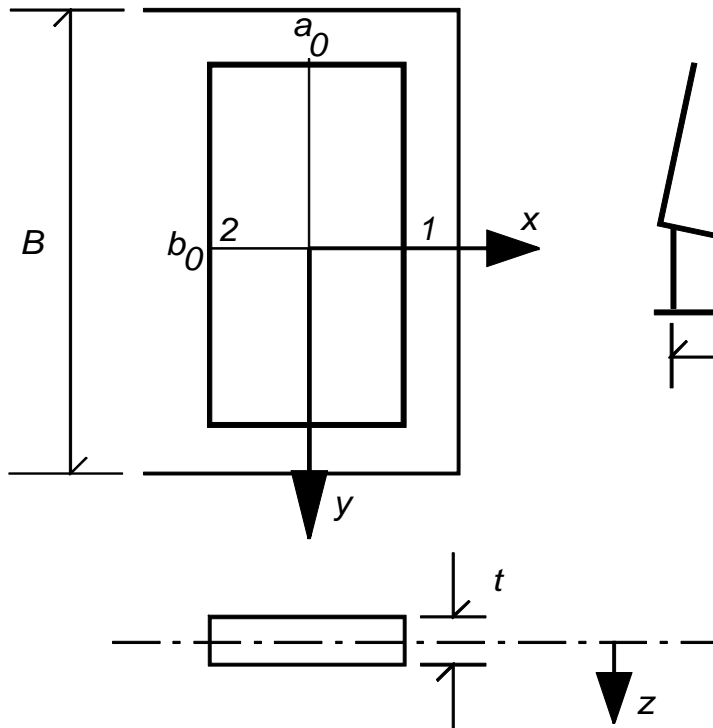


KUMILAAKERIN MUODONMUUTOKSET JA KUORMITETTAVUUS

PERUSTUU KUMIMALLIIN, JOKA ESITETÄÄN RAPORTISSA RTL 0105



KUORMITETTAVUUSFUNKTIO $P_k(a_0, b_0, t, g)$

a_0 = sivumitta rakenteen suunnassa

b_0 = sivumitta kohtisuorassa suunnassa

t = levyn nimellispaksuus

g = kumin kovuus (Shore A)

KUORMITETTAVUUTTA RAJOITTAVAT:

Kumin kokonaispuristuma enintään 3 mm =

P_{k3} alla olevissa lausekkeissa

Muut ehdot P_{k1} ja P_{k2} rajoittavat

leikkausjännityksiä ja normaalijännityksiä

RTL 0105 ehtojen mukaisesti

$$P_k = \min\{P_{k1}, P_{k2}, P_{k3}\}$$

$$P_{k1} = \frac{2G(h)AS}{1 + 1,7\alpha \frac{a_0}{t}}; \quad P_{k2} = \frac{G(h)A a_0}{C_p t} \left[2,5 - 0,5\alpha C_\alpha \left(\frac{a_0}{t} \right)^2 \right]; \quad \alpha \leq 0,01$$

$$P_{k3} = \frac{8\Delta_{c.lim} G_r(h)AS}{(t - 2\Delta_{c.lim})k_{slip}}$$

Huomautuksia:

Tuettavan rakenteen kiertymän suuruudeksi oletetaan seuraavissa tarkasteluissa $\alpha = 0,01$. Ks. eri käyrät, kun $\alpha = 0,005$.

Kumilevyjen mitat suositellaan rajoitettavaksi siten, että a_0 enintään 25t. Sivumittojen kasvaessa vaadittu levyn paksuus kasvaa, jotta P_{k2} ei mene negatiiviseksi.

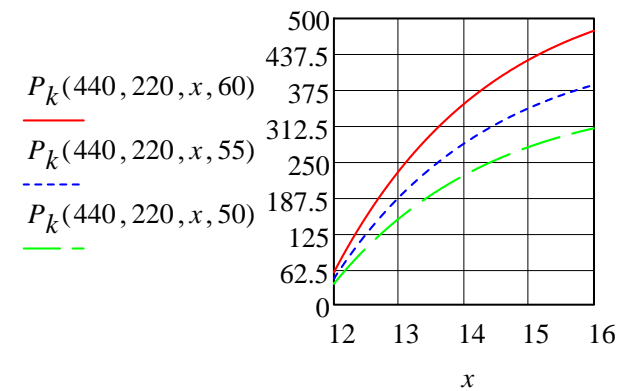
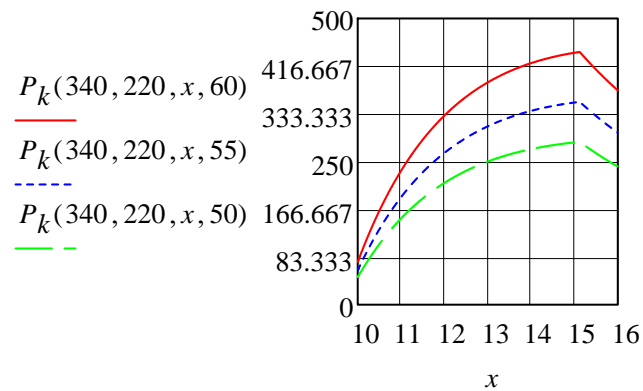
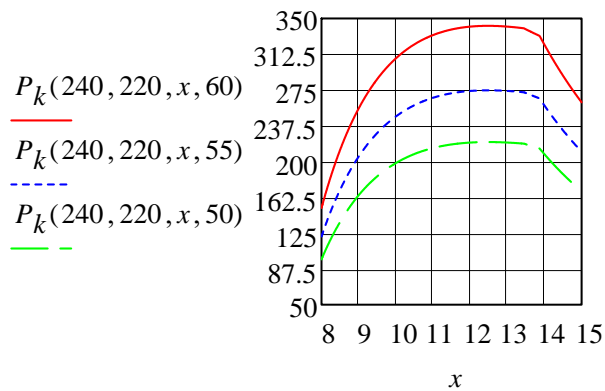
P_{k2} rajoittaa levyn leikkausjännityksiä, jotka riippuvat kiertymästä α . Levyn paksuuden kasvaessa levyn laajenevuus ja kovuuden hajonta kasvaa. Paksujen levyjen pintakovuus on suurempi kuin levyn tehollinen kovuus, jonka mukaisesti levy deformoituu. Valmistajien ilmoituksen mukaan tehollinen kovuus voi olla 5 yksikköä pienempi kuin ilmoitettu nimellinen arvo. Laaditut käyrät osoittavat, että tällä on merkittävä vaikutus kuormitettavuuteen.

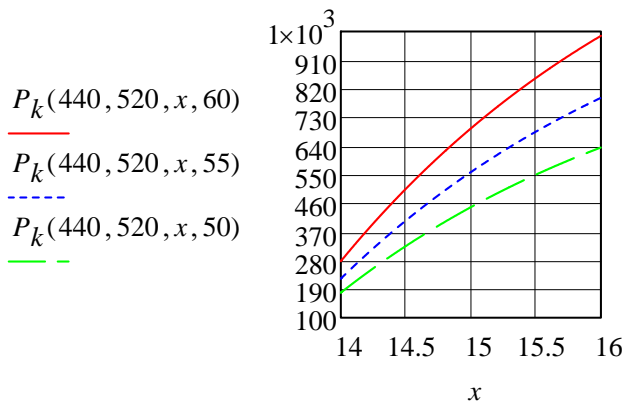
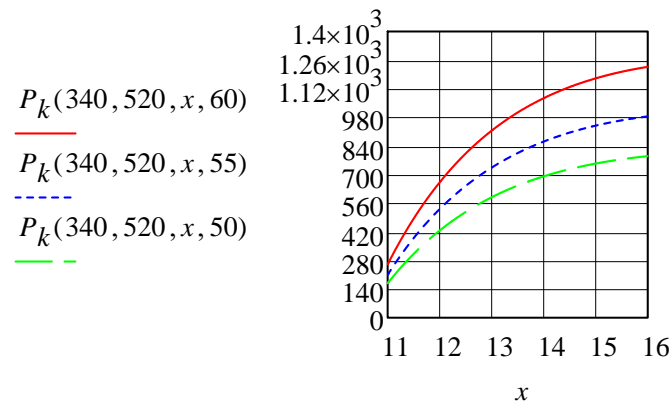
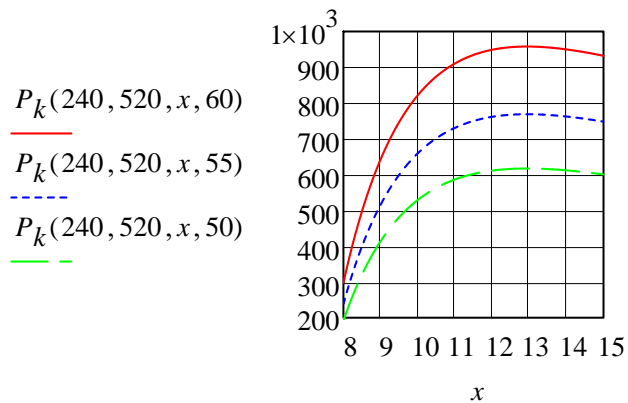
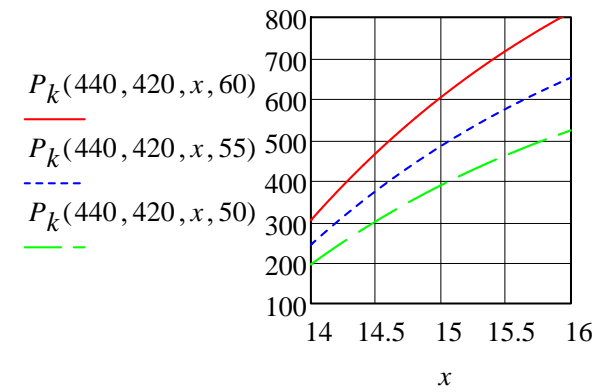
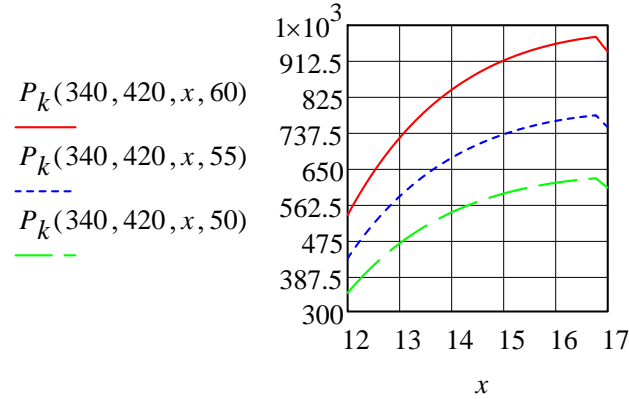
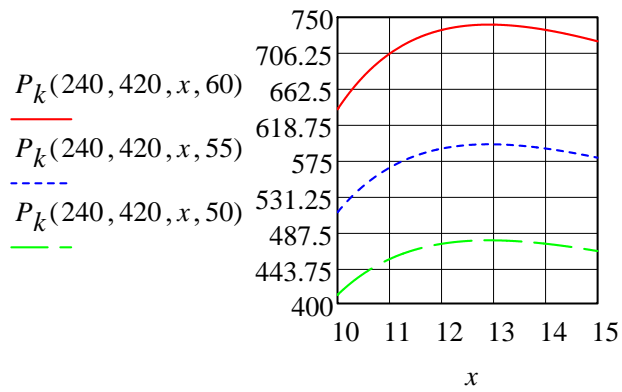
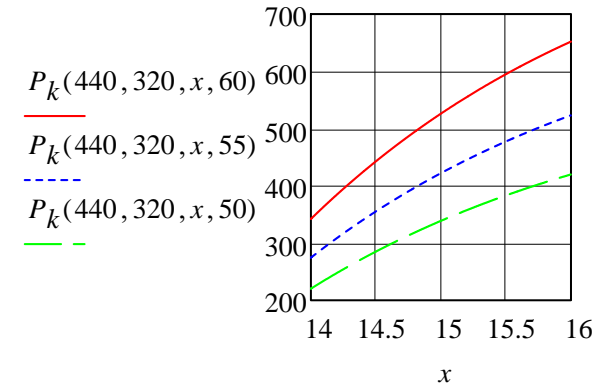
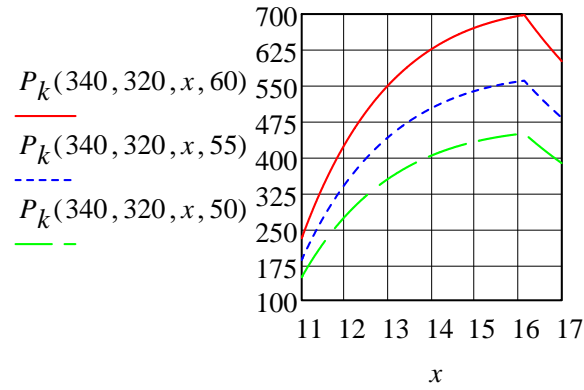
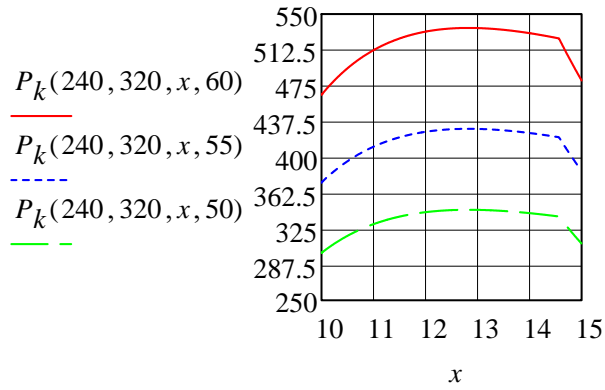
Levyjen paksuudet on rajoitettu enimmillään 16 mm. Suurien lähes neliön muotoiset levyt eivät ole soveltuvia, koska niiden paksuudet tulisivat yli 20 mm suuruisiksi.

TT-LAATAT, NEOPREENI 8 mm, Pk [kN]

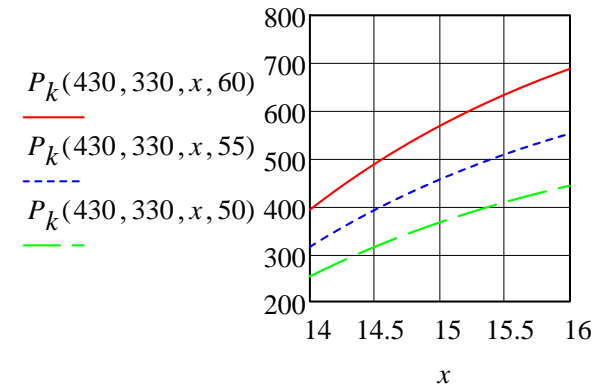
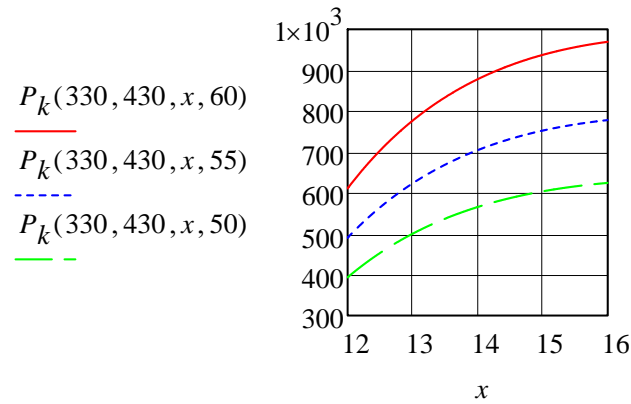
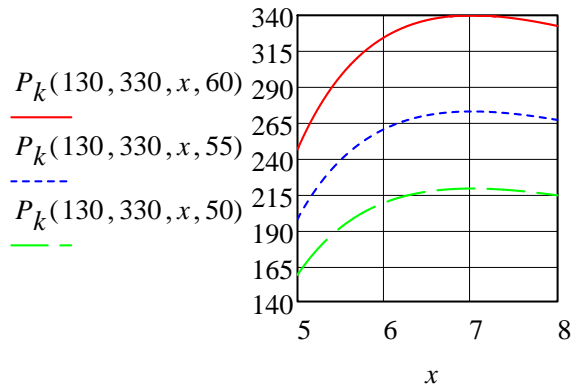
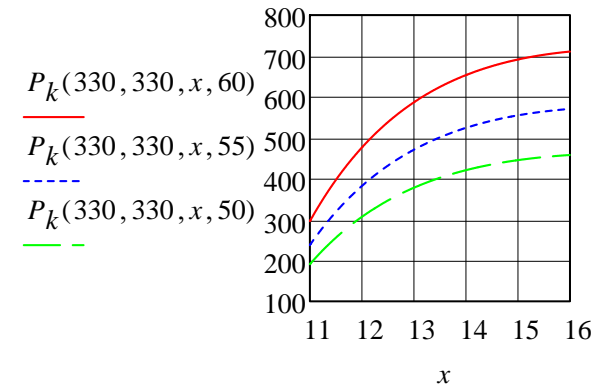
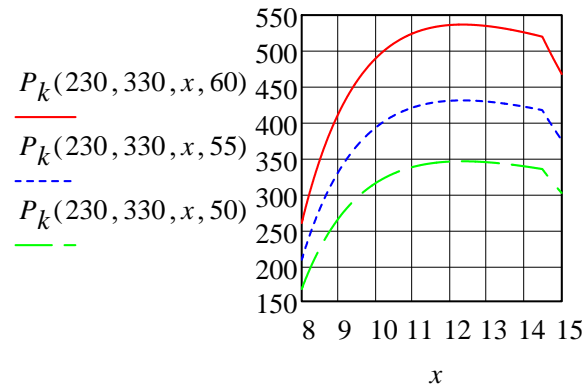
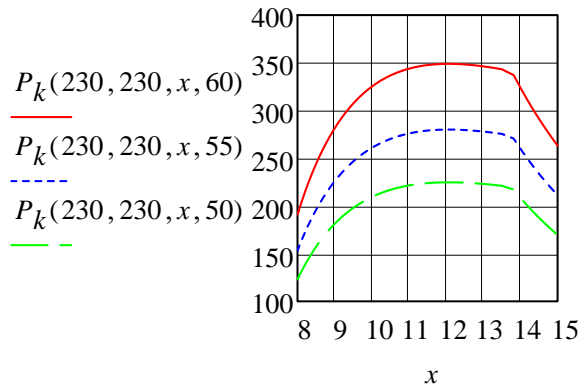
$P_k(150, 100, 8, 60) = 83.8$	$P_k(150, 100, 8, 55) = 67.2$	$P_k(150, 100, 8, 50) = 53.9$
$P_k(100, 150, 8, 60) = 91.1$	$P_k(100, 150, 8, 55) = 73.1$	$P_k(100, 150, 8, 50) = 58.7$
$P_k(180, 100, 8, 60) = 102.7$	$P_k(180, 100, 8, 55) = 82.4$	$P_k(180, 100, 8, 50) = 66.2$
$P_k(100, 180, 8, 60) = 114$	$P_k(100, 180, 8, 55) = 91.5$	$P_k(100, 180, 8, 50) = 73.4$
$P_k(150, 150, 8, 60) = 148.3$	$P_k(150, 150, 8, 55) = 119$	$P_k(150, 150, 8, 50) = 95.5$
$P_k(180, 150, 8, 60) = 164.9$	$P_k(180, 150, 8, 55) = 132.3$	$P_k(180, 150, 8, 50) = 106.2$
$P_k(150, 180, 8, 60) = 184.4$	$P_k(150, 180, 8, 55) = 148$	$P_k(150, 180, 8, 50) = 118.8$
$P_k(180, 200, 8, 60) = 228.3$	$P_k(180, 200, 8, 55) = 183.2$	$P_k(180, 200, 8, 50) = 147$

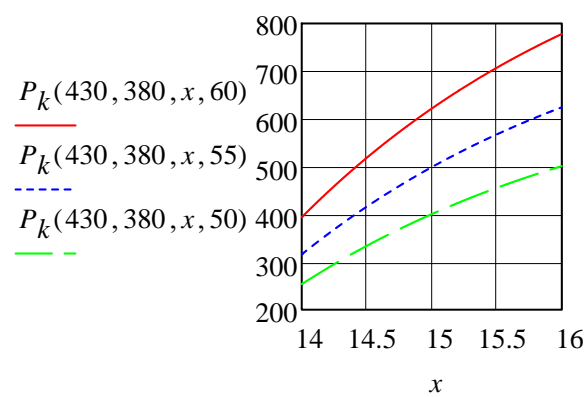
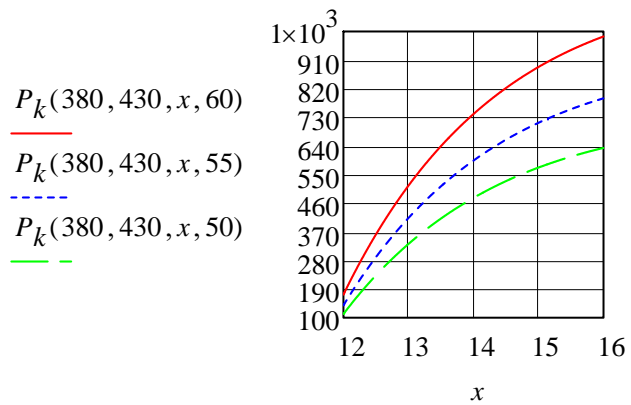
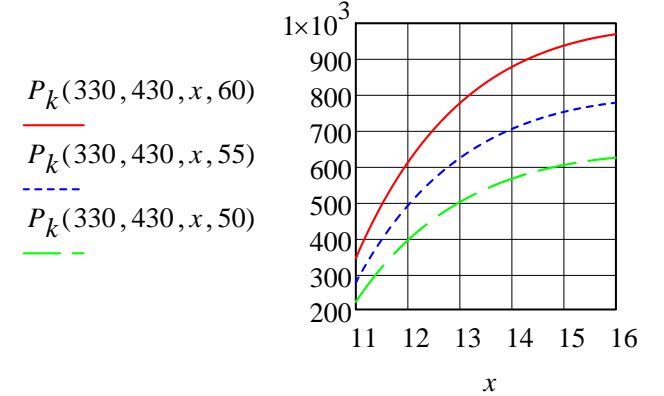
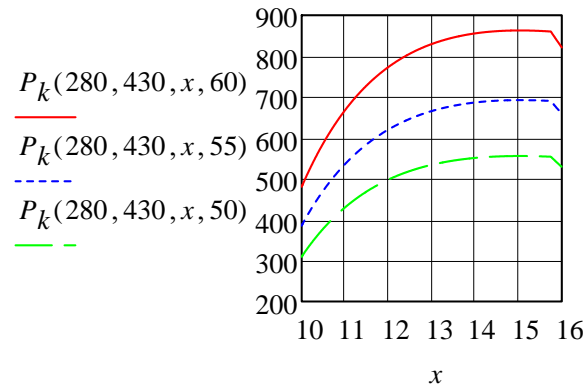
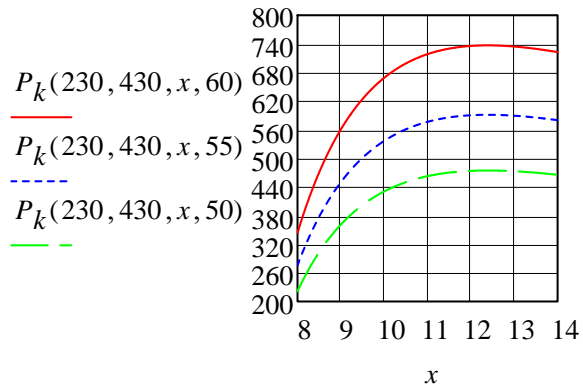
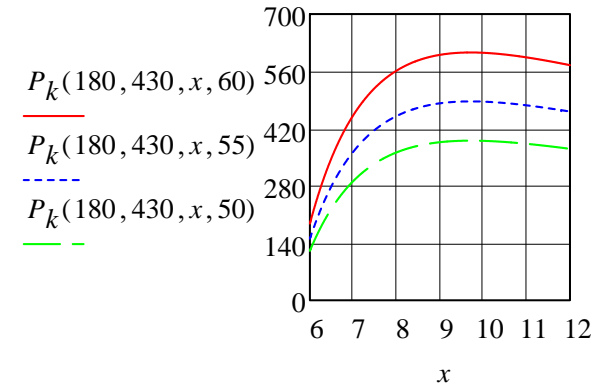
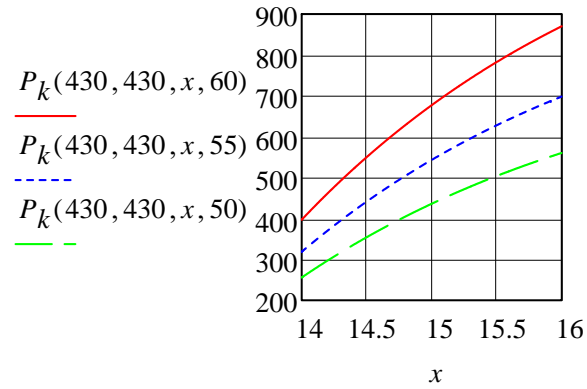
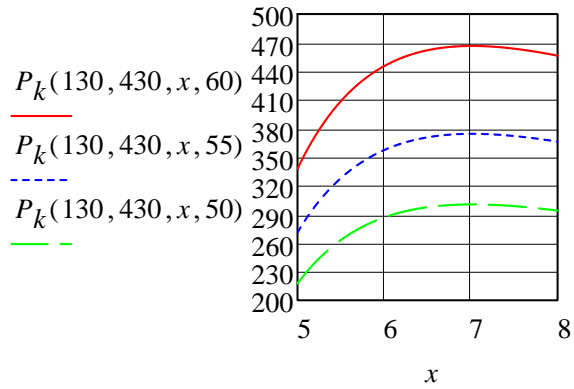
BETONIKONSOLIT , Pk [kN] LEVYN PAKSUUDEN x FUNKTIONA



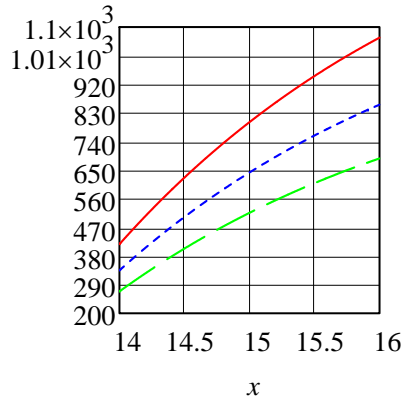


PILARIN YLÄPÄÄT, P_k [kN] LEVYN PAKSUUDEN x FUNKTIONA

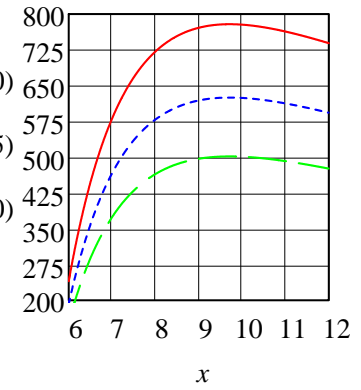




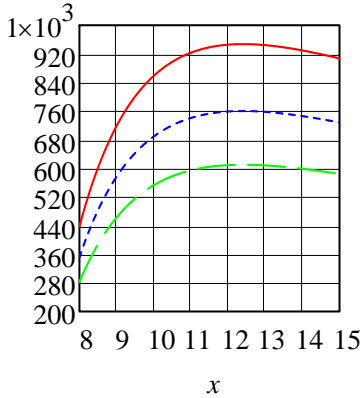
$P_k(430, 530, x, 60)$
 $P_k(430, 530, x, 55)$
 $P_k(430, 530, x, 50)$



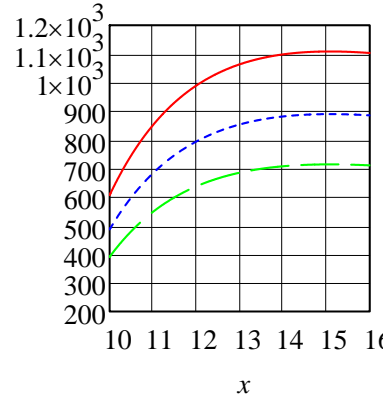
$P_k(180, 530, x, 60)$
 $P_k(180, 530, x, 55)$
 $P_k(180, 530, x, 50)$



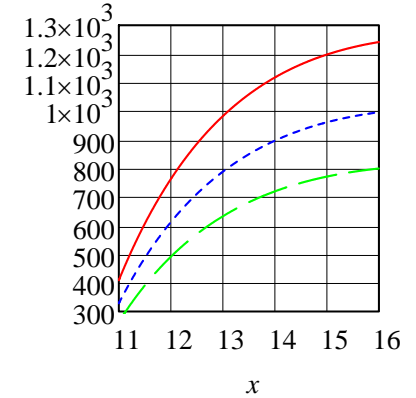
$P_k(230, 530, x, 60)$
 $P_k(230, 530, x, 55)$
 $P_k(230, 530, x, 50)$



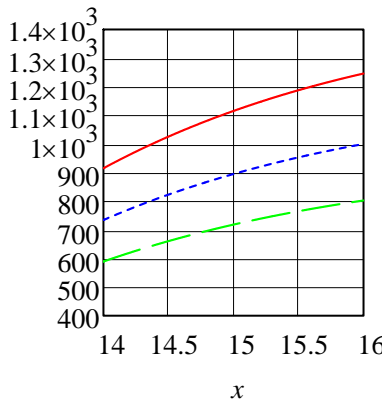
$P_k(280, 530, x, 60)$
 $P_k(280, 530, x, 55)$
 $P_k(280, 530, x, 50)$



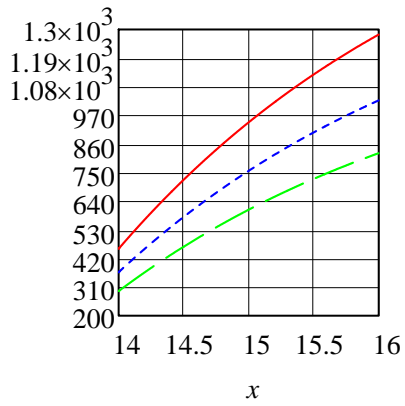
$P_k(330, 530, x, 60)$
 $P_k(330, 530, x, 55)$
 $P_k(330, 530, x, 50)$

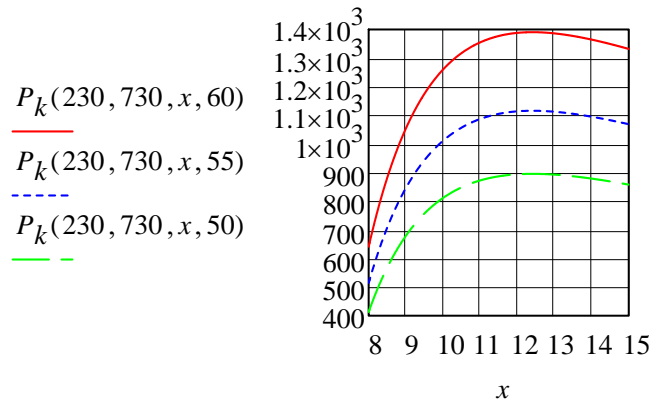
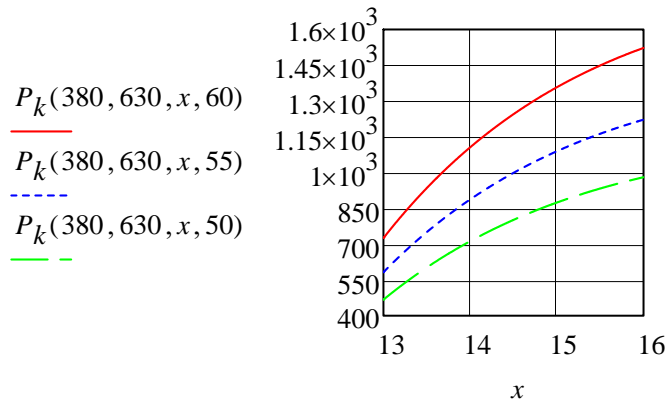
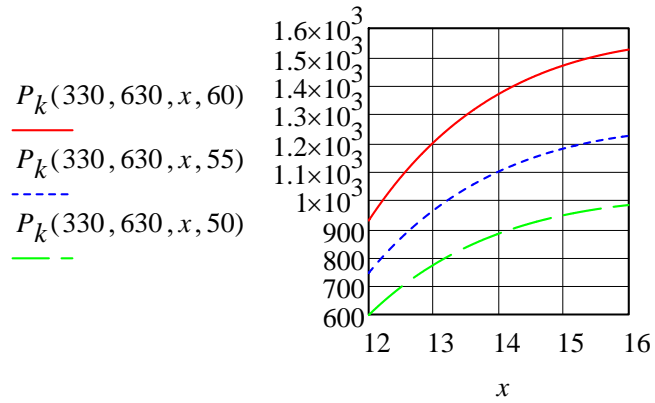
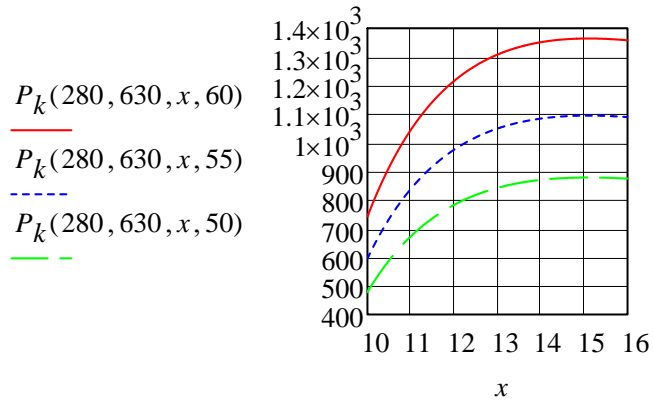
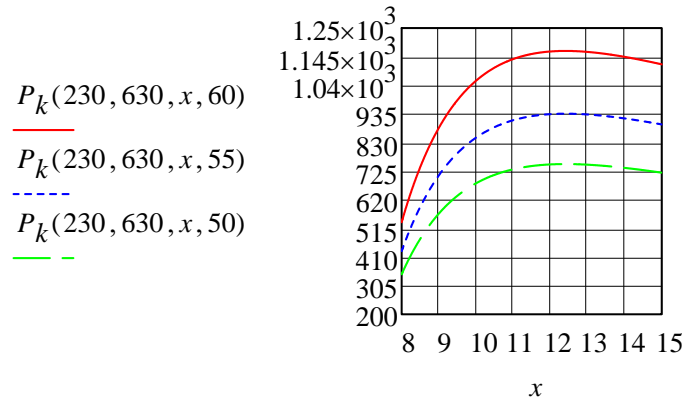
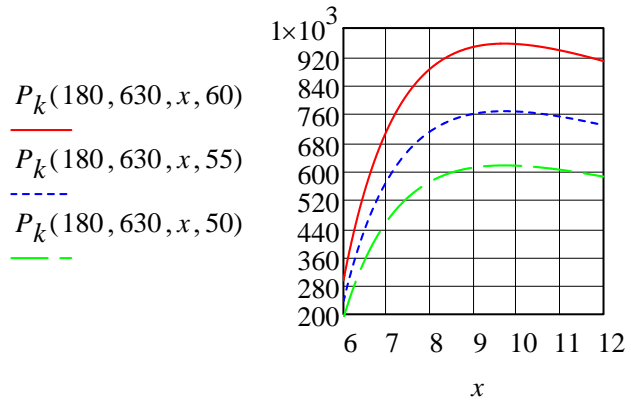


$P_k(380, 530, x, 60)$
 $P_k(380, 530, x, 55)$
 $P_k(380, 530, x, 50)$

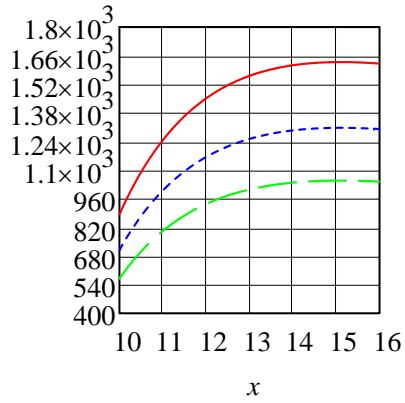


$P_k(430, 630, x, 60)$
 $P_k(430, 630, x, 55)$
 $P_k(430, 630, x, 50)$

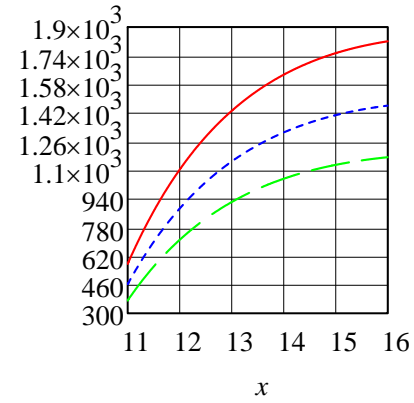




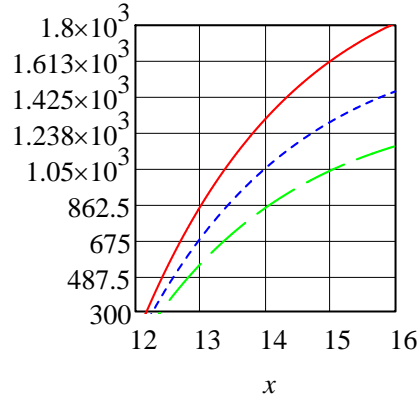
$P_k(280, 730, x, 60)$
 $P_k(280, 730, x, 55)$
 $P_k(280, 730, x, 50)$



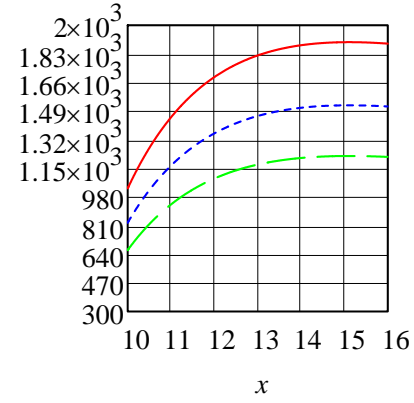
$P_k(330, 730, x, 60)$
 $P_k(330, 730, x, 55)$
 $P_k(330, 730, x, 50)$



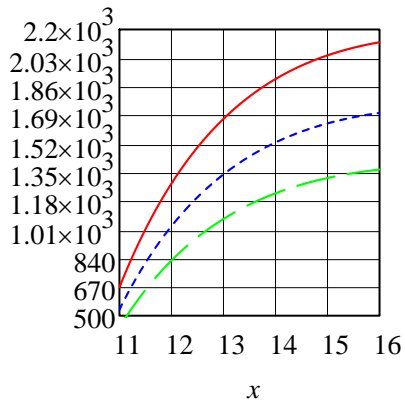
$P_k(380, 730, x, 60)$
 $P_k(380, 730, x, 55)$
 $P_k(380, 730, x, 50)$



$P_k(280, 830, x, 60)$
 $P_k(280, 830, x, 55)$
 $P_k(280, 830, x, 50)$



$P_k(330, 830, x, 60)$
 $P_k(330, 830, x, 55)$
 $P_k(330, 830, x, 50)$



$P_k(380, 830, x, 60)$
 $P_k(380, 830, x, 55)$
 $P_k(380, 830, x, 50)$

